The Chemical Age

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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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INDEX TO VOL. XXII.

With this issue is published an Index to Volume XXII of THE CHEMICAL AGE, *covering the period January 4 to June 28, 1930, inclusive.*

The Castleford Explosion

THE great explosion that occurred last week at the chemical works of Hickson and Partners, Ltd., at Castleford, Yorkshire, is the worst disaster of the kind that can be recalled since the great explosion of some years ago at the German nitrogen works at Oppau. Not only, as our photographs show, have the works themselves been wrecked, but the town of Castleford has suffered heavily, and, most regrettable of all, there is a heavy list of deaths and injuries. In the earlier case, where nitrogen compounds usually regarded as perfectly stable exploded, the most exhaustive investigation was prosecuted to discover the cause. Nothing resulted beyond certain general inferences and speculations. In this case, the official inquiry has only just begun, and it remains to be seen whether any real light can be thrown on the cause. At present the matter is a mystery to the chemists and technicians in charge of the works, and until the inquiry is concluded no good purpose can be served by speculation. All that is known at present is that a great volume of dense yellowish smoke was seen issuing from the acid-mixing department; before the fire extinguishing apparatus could be trained on it, the explosion occurred.

For the moment, the first duty is to express the sincerest sympathy, which will be shared throughout the entire chemical industry, for the firm itself and for the many people who suffer from the loss of life, injuries and damage to property. The name of Hickson has been long and honourably associated with the dyestuffs industry in this country; the head of the firm has an excellent record of public and industrial service. Those responsible for the works and the company have a difficult situation to face, and it may be some encouragement to them to know that they have the respect and goodwill of the industry in which they are so well known.

Occurrences of this kind, fortunately rare as they are, serve to remind us of the close relation between the production of dyestuffs and the production of powerful explosives—a relation the importance of which was forced upon us more than sixteen years ago. At the time of writing no information is forthcoming regarding the future of the Castleford factory. Will it be rebuilt? The firm had specialised in relatively few dyestuffs, such as, for example, sulphur blacks and magenta products, attaining a high standard of quality. How far is it possible to-day for a colour-producing firm organised on such lines to compete on favourable terms with such a large and powerful amalgamation as Imperial Chemical Industries, Ltd., or the Swiss Group, the latter now apparently in special relation to the I.G.? And what actions, in view of the uncertainty regarding the fate of the Dyestuffs Act at the end of this year, will the directors feel justified in taking? Speculation on the subject may be unprofitable, but it can hardly be avoided. In the Dyestuffs Industry, "Rationalisation," carried to its logical end, presumably involves the organisation of the whole dyestuff production under centralised control large enough to absorb all interests, or powerful enough to enforce its policies on otherwise independent producers. In such circumstanes, the position of the smaller makers must be difficult. How far the difficulties can be overcome cannot in some cases be seen by the outside world until something happens of a catastrophic character.

The Nitrogen Position

FERTILISERS, and particularly nitrogen fertilisers, have not escaped the world-wide depression of markets and prices, but signs are not wanting that better times are in store. Stripped of the popular fallacy that wheat, in which there is over-production, is a serious factor in nitrogen fertiliser production, the broad fact emerges that with no normal increase in the world's population

and the increased demand for meat and other foodstuffs, dependent upon fertiliser usage, the pendulum should at least swing back to normal by the end of 1931. It is rather a matter for surprise that the increased production of the I.G., coincident with the decline of the large Billingham output on a relatively unprepared market did not cause even graver dislocation. Whilst European production is materially curtailed temporarily, that in America and Canada is expanding rapidly, thus reversing the position of two years ago, both in production and in the views of the manufacturing interests concerned. It will be recalled that in 1928 the United States was painting a gloomy picture in marked contrast to the cheery optimism of Europe, which, with the refreshing exception of Lord Melchett, is to-day rather conspicuous by its absence.

No doubt questions of policy and concerted action play their part, and assuming that the European synthetic producers can close their ranks and come to terms with the Chile "Cosana," the danger of temporary uneconomic prices will have been averted. In the meantime it is only natural that the "big three" should discourage present and prospective competition, and accordingly the thoughtful reader will select suitable spectacles for reading current reports and technical papers on the subject.

Colonel G. P. Pollitt, of Imperial Chemical Industries, who has thoroughly earned praise for the Billingham conception, presented a most interesting paper on the synthetic ammonia industry to the second World Power Conference. It contains a mass of interesting facts and figures, which are authoritative except as regards the comparisons made with other producers whose costs were admittedly insufficiently available. Colonel Pollitt's general conclusion is one of quiet confidence in the future, but his arguments in support of the danger of entering this field may be to many less convincing, and might possibly be challenged by other authorities.

One of the principal items to-day in the cost of nitrogen synthesis arises from interest charges, depreciation, and obsolescence. Colonel Pollitt appears to base his figures upon obsolescence of only 5% on plant and 2½% for buildings, and also makes other assumptions, for purposes of comparison, which some might say would "hardly hold ammonia." His paper sought to demonstrate that hydrogen from coke-oven gas cannot compete successfully with that from water gas, but it has been admitted since that on a comparable basis there may be, if anything, a balance in favour of coke-oven hydrogen, particularly as it is most unlikely that in future there will be any new single nitrogen development planned on such a large scale as the Billingham factory.

Confirmation of these views reaches us as we go to press in the form of authoritative news in the columns of the *Kölnische Zeitung* and the *Rheinisch-Westfälische Zeitung* relating to the brief announcement which appeared in THE CHEMICAL AGE last week that the original Mont Cenis factory had been purchased by the I.G. Farbenindustrie. Working at lower pressures and temperatures, and a pioneer in the use of coke-oven hydrogen, the Mont Cenis process has caused some concern to the I.G., and it was quite reasonable to acquire this undertaking to supply the neighbouring I.G. Lothringen factory with ammonia, instead of transporting the latter from the big nitrogen works at Merseburg. The price paid for the factory, which is of between 25,000 and 30,000 tons annual nitrogen capacity, was rather more than £1,000,000, and somewhat in excess of the actual cost of installation. That the I.G. should pay such a price for the first and presumably least up-to-date of the Mont Cenis plants points definitely which way the wind is blowing and indicates confidence in the future. At the same time the capital cost per annual ton of nitrogen is in striking contrast with production costs elsewhere, and it is known that subsequent plants have been installed at materially lower cost. Two other Mont Cenis plants are under the control and part-ownership of the German Government Collieries, and although at present most Continental producers are operating at only 55% capacity, it seems clear that even on this basis there must remain a margin of profit to justify the conclusion of this deal. It is reported that the ownership of the Mont Cenis processes does not pass with the sale of this factory.

Imperial Chemicals

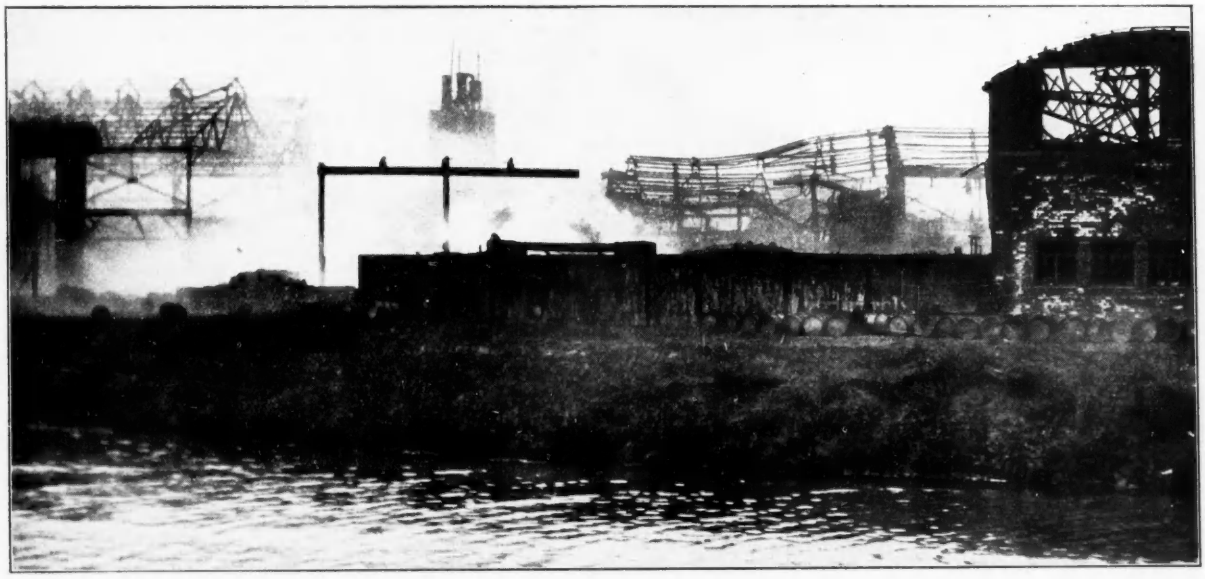
THE friendly exchange of opinions and information between a "City" deputation and some officials of Imperial Chemical Industries last week had the good effect of clearing away certain misconceptions. It requires no unusual insight to discover that, since the chemical industry is the feeder of almost every other industry in existence, any general depression of trade must be reflected in its own operations, but it is also known that the chemical industry is at present in as favourable a position as any other. Indeed, the reports as to Imperial Chemical business, even in so disturbed an area as the Far East, are remarkably good.

As to the fertiliser industry, the problem of overproduction has been for some time under discussion. The erection of new plants in so many countries for the production of synthetic ammonia was bound to have its effect. The danger of the rate of increased production out-running the rate of increased consumption has been more than once commented on. But the faith of the experts in the future of the industry remains unshaken. It is confidently estimated that in a few years time the existing productive capacity will be taxed to meet the demand, and that the cheapness of British production will stand favourable comparison with the costs in any other quarter, whether synthetic or natural. Lord Melchett's advice at the last annual general meeting may be recalled in this connection. He told the shareholders to lock their shares away and not worry.

The Calendar

July 14–19	Society of Chemical Industry: Annual Meeting. Presidental Address—Dr. Levinstein: "Only an Apprentice in Nature's Workshop."	Birmingham
Sep. 3–10	British Association for the Advancement of Science	Bristol.
Sep. 29 to Oct. 1	Faraday Society: General Discussion: "Colloid Science Applied to Biology."	The Laboratory of Physical Chemistry, Free School Lane, Cambridge.

Views of Explosion Havoc at Castleford Chemical Works



THE BURNING WORKS FROM THE RIVERSIDE.

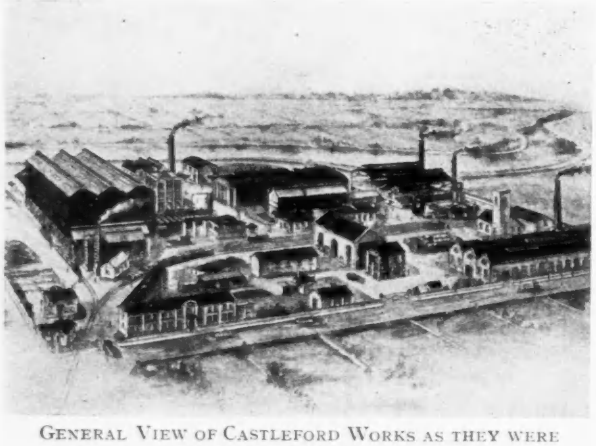
A VIEW OF THE RUINS.

Great Chemical Works Explosion at Castleford

Thirteen Men Killed at Hickson and Partners' Factory

One of the worst explosions of recent years took place on Friday, July 4, when thirteen men lost their lives at the chemical works of Hickson and Partners, Ltd., Castleford, Yorkshire, and a large part of the town was devastated. Messages of sympathy have been received from the King and Queen and a Distress Fund has been opened for the relief of nearly 500 people who have been rendered homeless by the destruction of their houses.

THE chemical works of Hickson and Partners, Ltd., Castleford, Yorkshire, were the scene of a terrible explosion shortly before noon on Friday, July 4, when thirteen men were killed and very severe damage was done to property in the town. So far the exact cause of the explosion has not been discovered, but it was preceded by a fire which broke out in the acid mixing department of the factory. Almost at once the works firemen were on the scene and apparently they were about to train their apparatus on the seat of the trouble when the plant exploded. The factory roof was blown off and 300 houses in the town were so badly damaged by the force of the explosion as to be rendered uninhabitable. The whole district was



GENERAL VIEW OF CASTLEFORD WORKS AS THEY WERE BEFORE THE EXPLOSION.

completely disorganised—lights, telephones and other services being put out of operation.

The names of the dead men are: Councillor Thomas G. Phillips, chief engineer of the works; Frank Hodgson, foreman; George Albert Lancaster, yard foreman; Albert Clayton, foreman; W. F. Matthews, foreman; Herbert Sutcliffe, process worker; James Skitt, pump attendant; Leopold Blakey, process worker; John Bancroft, cooper; Matthias Holgate, fitter; Charles Cade; Percy Waterhouse; and Emmanuel Tong. Four others are lying seriously injured in Castleford Hospital.

The firemen of the Castleford, Pontefract and Leeds brigades were obliged to use respirators to make their way through the chemical fumes at the works, where it took them about two hours to subdue the actual fire. A large benzol plant and a gas-holder were situated close to the plant which caused the explosion, but the brigade was able to prevent them being involved and so avert further explosions. Several firemen were overcome by the fumes and, at the warning of members of the firm, were once or twice forced to withdraw. They proceeded, however, with the task of extricating the dead and injured from the mass of twisted metal and heaped-up bricks to which this section of the works had been reduced. Some of the bodies were badly mutilated and identification was a matter of difficulty.

Clouds of yellow acid fumes were still rising from the works on Saturday, and two fully qualified chemists were working with the fire brigade in six-hour shifts to take whatever steps might be necessary to prevent further outbreaks. There was another slight explosion, due, it is believed, to leakage from tanks, but nothing to cause serious alarm.

Director's Statement

Mr. Bernard Hickson, the managing director, in a statement on Monday night, said the explosion occurred in the acid mixing department, and not in the nitration department, as had at first been reported. This made it all the more difficult to understand what had happened.

The accident was preceded by a rush of brown fumes from which there suddenly occurred a large yellow flame similar to an enormous gas flame. Mr. Phillips, the chief engineer, with the leading members of the works fire brigade, immediately rushed for the works chemical fire engine, but this was not started. Some workers pushed it towards the fire, got the engine into place, and were proceeding to put it into operation when the explosion occurred. So far there was no information as to the cause of the explosion.

Mr. Hickson said that Mr. T. P. Carr, managing director of the Yorkshire Coking and Chemical Co., came immediately after the explosion, and at considerable danger rendered invaluable assistance in getting out the injured and killed. The fact that the chief engineer and four foremen were among the dead spoke for their bravery. The bulk of the men who had been killed had been there for many years, and their very presence at the source of danger proved their bravery, because normally they would not be working near it.

The benzol plant and storage, which was near the seat of the explosion, fortunately had been designed in accordance with the latest modern safety practice, and it did not even

PHOTOGRAPH TAKEN AT THE SCENE OF THE EXPLOSION.

catch fire except for a very small section, which was kept under by the Castleford Fire Brigade for half an hour and then put out. Through the assistance rendered by the Fire Brigade, coupled with the bravery of some of the chemists, danger points such as the benzol house were isolated, thus preventing the spreading of fire.

The firm have received offers of assistance from many firms in the chemical trade in the country, which in the reorganisation period would be of great value. In consequence of the explosion the number of unemployed in the Castleford district has increased by about 100.

Inquest Adjourned

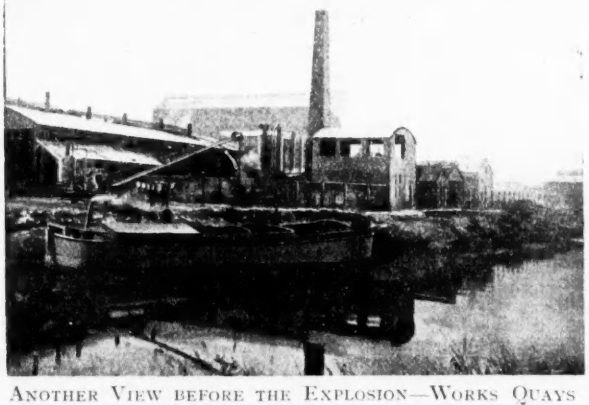
The inquest was opened on Saturday at Castleford, where the Coroner (Mr. W. Bentley) described the catastrophe as the most appalling that had ever occurred in the district. After hearing evidence of identification, he adjourned the inquiry provisionally until July 28. The firm of Hickson and Partners was represented by Mr. B. Hickson (managing director), Mr. H. G. Franks (technical director) and Mr. H. W. Hull (traffic manager), who announced that from records kept by the firm, it had been found that all of their people on the premises at the time of the explosion had been accounted for.

Following an emergency meeting of Castleford Urban Council, a Distress Fund was opened, and steps were taken to provide temporary accommodation for the 500 people who had been rendered homeless. Two hundred pounds was given by Lord Brotherton to a fund organised by the Lord Mayor of Leeds, and by Wednesday nearly £4,000 had been contributed to the various relief funds.

The King and Queen sent a telegram of sympathy to the Lord Lieutenant of the West Riding, Lord Harewood, and other messages were received from the Prime Minister and the Home Secretary.

Factory's War Time Origin

The works of Hickson and Partners, Ltd., were erected at Castleford in 1915, at the instigation of the War Office, for the manufacture of T.N.T. The founder, Mr. Ernest Hickson,



ANOTHER VIEW BEFORE THE EXPLOSION—WORKS QUAYS ON RIVER AIRE.

had previously owned chemical works at Wakefield, but these were found to be inadequate for the output required, and a new site was taken on the banks of the River Aire, just below its junction with the Calder, giving a frontage for quays of some 650 feet. The work of erection was begun on January 22, 1915, and continued with such speed that the first delivery of T.N.T. was made on the following July 13.

The founder had been intimately connected with the aniline colour trade since the earliest days, and the new works were so designed that they could be eventually converted into a self-contained colour factory, capable of making its own intermediates and dyes, and dependent on other sources only for crude basic raw materials. For this purpose, after it had been found impossible under war conditions to construct an oleum plant quickly, a large sulphuric acid chamber plant was erected to a modified Belgian design. A large nitric acid plant was added, and another for the rectification by frictional distillation of coke oven benzole.

After the war the plant was gradually turned over for the manufacture of intermediates, chiefly nitro and amido derivatives of benzene, toluene and xylene, and the further working up of some of these products into more complicated compounds and some finally into dyes. A speciality was made of nitrobenzene, aniline, ortho- and para-toluidine, and among dyestuffs, of sulphur blacks and Magenta and Rosaniline base for the production of soluble and alkali blues. Mr. Ernest Hickson has been intimately associated with the production and sale of sulphur blacks ever since their original discoverer, M. Vidal, first made them in England.

The development of the Castleford works took place largely under the supervision of the founder's son, Mr. Bernard Hickson, M.Sc., who inspected practically all the large nitrating factories carried on during the war, and, as a member of the chemical mission to Germany appointed by the Department of Overseas Trade in 1919, had an opportunity of studying the organisation of the plants of foreign colour works.

Imperial Chemical Shares

A "City" Deputation

THE financial "Diarist" of the *Financial Times* states that last week several leading jobbers in the industrial market, accompanied by one or two brokers, had an informal conference at Imperial Chemical House with leading officials and a director of the company. They were highly gratified at the full and frank way in which all their exhaustive inquiries were met, and came away convinced that there is nothing in the position of the company or its business to warrant the exaggerated extent to which its shares have fallen.

The deputation was assured that the Imperial Chemical officials themselves have been astonished at the way in which the company's business has been maintained throughout a period of world depression. For the first five months of the current financial year trade was as good as, if not better than, in the corresponding period of 1929. Advices just received from China show that last month's sales there were the best this year, and that on top of a reasonably satisfactory average in that country for the earlier months.

Brunner-Mond Contributions

A matter which has been a canker in the Imperial Chemical share market for weeks past has been the fact, brought out in "An Investor's Notebook" on May 16, that on the face of things the Brunner-Mond subsidiary contributed the alarmingly disproportionate amount of £4,000,000, tax free, out of the combine's total declared profit for 1929 of £6,500,000 odd.

The representatives of the Imperial Chemical company thoroughly cleared up this question at the interview—it was commented that it was a pity they had not done so much sooner. It appears that it was desired to bring a large proportion of the Brunner-Mond's reserves into Imperial Chemicals' balance sheet, and the simplest way to do this was for the subsidiary to pay over a 41¼ per cent., tax free, dividend. Only the proportion of this which was certified by the auditors as profit was taken into Imperial Chemicals' profit and loss account. The substantial balance, which represented assets or reserve funds, went to Imperial Chemicals' balance sheet.

Although 1930 looks like proving an exception to the rule that the use of fertilisers grows by a considerable percentage annually, Imperial Chemicals' technical advisers are convinced that in two or three years' time the world's existing capacity for production of both natural and artificial fertilisers will be far below the then demand. It was claimed that the company's new works at Billingham can produce nitrate cheaper than anywhere else, cheaper even than from the Chilean guano deposits. But the product from the latter is mainly sold in the United States, where the Imperial Chemical company does not compete, so that—commented one of the deputation—there seems no need for a price-cutting war. Indeed, there are friendly agreements in existence to obviate such a struggle.

The company's officials dismissed the question of any depreciation in the company's outside shareholdings as having more than a trifling effect on its fortunes. It was not, apparently, either admitted or denied that a holding was owned in the International Nickel Co., but it was remarked that, even if International Nickels fell to nothing, the interests of Imperial Chemicals itself would not be materially injured.

The Medical Patents Memorandum : An Analysis

By G. Malcolm Dyson, Ph.D., A.I.C.

THE publication, in last week's issue of THE CHEMICAL AGE, of the Joint Chemical Committee's memorandum regarding the question of medical patents raises a number of issues that are worth more than a passing thought by chemists of all denominations, not only on account of the present subject, namely medicinal chemicals, but also on account of the very obvious extension of this principle to other branches of industry : that of foodstuffs has already been mentioned as suitable. The memorandum does not say the last word on the subject—a view which is confirmed by the Institute of Chemistry's action in dissociating itself from its representatives' acquiescence to the proposed alterations.

Put briefly, the memorandum states that owing to the prejudice which exists among medical men against the patenting of medicinal preparations, it is desirable to sequestrate (by dedication to the nation) all future patents in this field, the same to be administered by a trustee for the benefit of the people. It will readily be seen that the present controversy centres around two points, namely, whether, in point of fact, the objections brought forward by the medical representatives are real and, if so, whether they can be justified ; and secondly, whether the scheme of compulsory dedication is the best way of temporarily solving the problem.

Chemist and Medical Man

SECTION I (a). "Such inventions usually arise from purely chemical investigations, and the medical research worker only intervenes at the stage of pharmacological and clinical trials."

It is important to establish the fact that the mainstay of progress in chemotherapy is the chemist, and that without him there would be no chemotherapy. It is futile to attempt any generalisation about the shares in inventive faculty which are borne by the chemist and medical man in all cases, but one has only to review the history of such substances as aspirin, chloramine-T, novocaine, salvarsan, hexamethylenetetramine, etc., to realise that the chemist invents and the medical man tests.

Chemotherapy, it seems, can only progress along these lines. It is assumed that the disease which is being studied is capable of treatment by some chemical compound. The question arises as to which one is most suitable. No amount of study of the disease, in our present state of ignorance, will tell us this ; and one obvious alternative would be to start at one end of Beilstein and work right through it until a compound was obtained which effected a cure. This requires no inventive faculty, but the chance that a useful compound would be found is very remote. In the introduction of any purely chemical remedy the chemist must discriminate between possible substances ; must reduce the toxicity of a compound which shows promise by the introduction of fresh chemical groups which alter the toxicity without altering the therapeutic effect, and must seek to elevate the therapeutic activity of the successful compounds by the synthesis of new types and examples ; he is, in short, the "real and true inventor." The medical man only ceases to be a testing machine when he deals with biological products in such a way as to involve principles which are not purely chemical. There is nothing, of course, to prevent a medical man from being sufficient of a chemist to carry out the necessary chemical operations and deductions, but such cases are so rare that they may be said to be the exception rather than the rule. To sum up, it may justifiably be said that this question of inventing drugs is more a matter for the chemist than for the medical man ; a view which we have succeeded in demonstrating to the Institute of Chemistry.

Medical Code of Ethics

SECTION II, Paragraph 1, lines 5–9.—". . . the medical profession, a large section of which is resolutely opposed at present to taking out such patents, whether they be of purely chemical or biological origin, . . ."

One cannot help feeling that this dictum is inspired by a very limited section of the medical fraternity. Dr. Renshaw, in a recent issue of this journal, showed that there was little evidence available for this view, and adduced correspondence from the General Medical Council to prove that the patenting of medicinal chemicals was allowable according to their code of ethics, from which there seemed to be some disagreement between the opinions of this body and those of the British Medical Association. It is now known that the pathologists' section of the Association, which is mainly concerned with this matter, had not been consulted, and only a week ago the Manchester section of the British Medical Association passed a resolution that they considered the patenting of medicinal chemical substances by registered medical practitioners for profit to be quite ethical ! Here is an astonishing state of affairs ; Association headquarters say that it is *not* ethical ; the Manchester section, a widely influential body of men, say that it *is* ethical ! It proves that the "large section of the medical profession" that is so "resolutely opposed to taking out such patents" is not so large as might be imagined ; in fact, it probably boils down to a majority on a sub-committee, which, taken together with the fact that nine out of ten medical men are unable to distinguish between a "patent medicine" and a synthetic drug of known and approved constitution obtained by a patented process, explains much.

SECTION II. Paragraph 2. Lines 4–6. "A patent in relation to any medical remedy tends at first sight to give the impression of making profit out of human suffering."

SECTION IV. Last three lines. "It is improper to profit by royalties out of curing the sick."

An eminent London surgeon of world-wide reputation recently remarked that he was sick "of the hypocrisy which led medical men to pretend that they did not desire any material reward," and that "most medical men were in the profession to make a living out of it, and that the sooner they admitted it the better." To the ordinary man, it is very difficult to appreciate the ethical difference between (a) a medical man who takes royalties on a drug produced by a patented process, (b) a manufacturer who does likewise, (c) a medical man who accepts a fee for preparing an autogenous vaccine, and (d) a midwife who accepts fees for assistance at childbirth. Each has done humanity a service, and is economically entitled to recompense.

Royalty Terms for Medicinal Chemicals

SECTION II, paragraph 2, lines 3-4 : ". . . when doctors prescribe a particular drug they are expected to be free from any suspicion of financial bias in its choice."

It seems rather a mean accusation against the profession that they might prescribe the wrong drug in order to get the royalties on the sale and it becomes ludicrous in the light of actual figures. Most royalty terms for medicinal chemicals are based on $2\frac{1}{2}$-5 per cent. of the net invoice sales, and the picture arises of the eminent medical man increasing his takings from £3 3s. to £3 3s. 3d. by the prescribing of a 5s. bottle of his own specific ! We do not accuse the surgeon of prescribing a larger operation than is really needed in order to increase his fee, and to accuse the medical man, however obliquely, of a similar offence is absurd.

Section III raises the very important point of the worker who "is lucky enough to take up the work at a certain stage when most of the work has been done, and who merely puts the finishing touches to it." Two aspects of this are able to afford valuable considerations. In the first place, do not we all do this ? Is it given to more than one man in a century to do more than add the next stone to the already massive pile of knowledge ? It might be argued that Cadet and Bunsen, rather than Ehrlich, should have the credit of salvarsan, and that the modern antimonials for kala-azar are really the work of Paracelsus and Basil Valentine. It is nonsense to talk of progress in chemotherapy in this way ; the question immediately arises as to why Mr. A., who started the work, left it in such a state that it only wanted a finishing touch. Surely Mr. A. could have supplied it ; if not, Mr. B. who has the brains and foresight to do so, is entitled to his reward. Actually, such cases are rare ; one or two have happened with the present author, who was able to solve the final equation in two cases where much of the spade-work had been done by others ; all four shared equally what reward there was, and such, I take it, would be the normal procedure.

The question of secrecy is not affected in reality by the patent situation. At the end of Section III the memorandum suggests that the reward of the true scientist is the satisfaction of advancing knowledge, and not monetary reward. Here, again, two points arise. The first is that, even whether this be true or not, the scientist must live, and a very convincing case was made out for the retention by the independent worker of his patent rights in a recent issue of this journal. The second point relates to the matter of secrecy: if the scientist remains true to the type existing at present, he will want the credit of his discoveries and will keep them a secret until they are perfected, patents or no patents, and, in any case, the publication of little snippets of research results is not to be encouraged. There is a tendency abroad to publish some research contribution, at all costs, say, once a month, and the result is that the research journals are full of "paperettes," in which the world is informed that Mr. So-and-So has done another hour or so's experimental work and has prepared a new compound, in view of which his epoch-making theory of last month will now be reversed.

Finally, one comes to the scheme itself. This has been so widely commented upon both in this journal and in the lay press that it would be idle to deal with it again in detail. It is regarded by many as creating a dangerous precedent in that it allows the State to confiscate the property of the individual in a new way; that is one drawback. Among the many other drawbacks of the scheme may be mentioned its complete ignorance of the fact that there is a scheme by which compulsory licences can be obtained for the manufacture of medicinal substances, and finally one may add, not without a flicker of the eyelid, that suitably drafted patents might create a real monopoly for the holder of the first licence.

A Swiss Firm's Patent Relinquished

In a recent lecture on "Fine Chemicals," Mr. F. L. Pyman, in dealing with the question of medical patents, cited "the brilliant work of Harington and Barger in determining the constitution and the synthesis of thyroxin" and the monopoly which a Swiss firm had acquired by securing British Patent No. 318,582 for an improvement on the novel, but unpatented method of synthesising thyroxin adopted by Harington and Barger. Mr. Andrew Home-Morton (general manager) communicates to *The Times* the following statement on behalf of F. Hoffmann-La Roche and Co., A.G., of the "Roche" Research Laboratories, Basel, Switzerland, the holders of the patent in question:—

"Apart from the question of the actual value of the process covered by our patent, it is quite certain that, compared with Harington's fundamental invention, it is of minor importance. By taking out this patent we aspired to no monopoly. We merely wished to manifest to the outer world that our laboratories had been successful in improving the method. In order, however, to avoid any misconstruction of our intentions, and in view of Pyman's arguments, we have decided to relinquish our claim to the patent and thus to allow our process to become general property."

The Sale of Coalite Smokeless Fuel

In the Chancery Division on Tuesday before Mr. Justice Farwell, the action by the Low Temperature Carbonisation, Ltd., against the Leeds Industrial Co-operative Society, was mentioned in a motion for judgment by consent.

Mr. Bray, who appeared for the defendants, said he had given an undertaking not to sell or offer for sale as Coalite Smokeless Fuel any Coalite not of the plaintiffs' manufacture and not to infringe plaintiffs' trade mark.

There would be an order for the payment out to the plaintiffs of £5 paid into Court by the defendants, and the defendants would pay the taxed costs of the action.

His Lordship: Very well.

Belgian Regulations for Paint Spraying

According to a royal decree published in the *Moniteur Belge* of April 29, 1930, several regulations are placed in force regarding the application of paint by air guns and other types of pneumatic equipment when the process of employment presents a fire hazard or danger from noxious fumes. The Ministry of Industry and Labour is to execute the decree.

New President of Canadian Institute of Chemistry

Mr. E. T. Sterne, the newly elected President of the Canadian Institute of Chemistry for the year 1930-31, who is a director of G. F. Sterne and Sons, Ltd., Brantford, Ontario, has had considerable experience in organisation work and industrial research, and is one of the outstanding industrial chemists and chemical engineers of Canada.

Following the war, during which time he was engaged in the acid and chemical works of Trenton, he represented the Shawinigan chemical interests in England. Returning later to the firm of G. F. Sterne and Sons, Ltd., manufacturers of asbestos and other cements, and large scale distributors of silicate of soda, essential oils and asphalt emulsions, he entered actively into the development of that business, and is at present in charge of extensive laboratories which are maintained by the firm at Brantford.

Mr. Sterne is associated with other branches of engineering and is a Past President of the Ontario Association of Professional Engineers. He has held many offices connected with organisations in the City of Brantford, and is an active member of the Canadian Manufacturer's Association.

Institution of Chemical Engineers: New Members

The quarterly bulletin of the Institution of Chemical Engineers for July states that the following have been elected to membership:—*Members*—Barclay Brown Murdoch, B. Winstone and Sons, Ltd.; Cecil Revis, Lever Brothers, Ltd., London. *Associate Members*—Harry Gollop, "Vernon," Portsmouth; Cecil Featherstone Hammond, Submerged Combustion, Ltd. *Graduates*—Victor Merton Bunyan, Manly Gas Co., Manly, N.S.W.; William McNinch Hyslop, Orgreave By-Product Coking Plant, Sheffield; Brendan Kerney, Gas Light and Coke Co.; Donald Athole Robertson, British Celanese, Ltd., Spondon; Charles Price Warden, Massachusetts Institute of Technology, Cambridge, U.S.A.; George Frank Wilkinson, Graesser-Monsanto Chemical Works, Ruabon; Cecil Levenberg (transfer from Student), Roan Antelope Copper Mines, Rhodesia. *Student.*—Shanker Rao Amrith Rao Saletore, University College, London.

Statement by Lord Melchett

A statement on the financial position and outlook of Imperial Chemical Industries, Ltd., was issued by Lord Melchett on Tuesday. The chemical industry, like all other industries, he said, had been affected by world economic conditions, but the technical progress made by the combine's various undertakings was extremely gratifying, and the position of the companies was financially and otherwise exceedingly strong. He had the utmost confidence in the future of the combine.

As to industry generally he thought we had reached the limit in the crisis of trade depression both here and in America. Indeed, the indications pointed to a slight and gradual improvement. No country would benefit more than ours from this increased purchasing capacity of our customers.

F.B.I. Register, 1930-31

The tenth annual edition of the F.B.I. Register of British Manufacturers, 1930-31, has just been published by the Federation of British Industries, 39, St. James Street, London, S.W., and is slightly bulkier than its predecessor. It contains a list of industrial products and manufactures under some 5,000 headings and the names and addresses of their makers, together with sections showing brands, trade names and advertisements. Over 116,000 volumes of the Register have now been distributed in the United Kingdom and Overseas markets.

Reactivity of Coke

The Influence of Iron Compounds

THE influence of inorganic constituents of coke, particularly iron, on its reactivity to carbon dioxide is discussed in Fuel Research Technical Paper No. 25, which the Department of Scientific and Industrial Research has just issued under the title of "The Reactivity of Coke 3.—The Influence of Iron Compounds," by J. H. Jones, J. G. King and F. S. Sinnatt (H.M. Stationery Office, 42 pp. 9d. net). It is the third of a series on "The Reactivity of Coke," the earlier papers being Nos. 18 and 22. The first gives a description of the standard method developed at the Fuel Research Station for the measurement of the reactivity of coke to carbon dioxide at a temperature of 950° C. No. 22 contains a number of results obtained with metallurgical cokes.

In the present paper it is shown that the iron in coke, and the form in which the iron is present, has a most marked, and probably a predominating, effect on the reactivity. The large fall in the reactivity value (from that known as Reactivity I to that known as Reactivity III), which is caused in some cokes by the passage of carbon dioxide at a temperature of 950° C., is shown to be mainly due to the change in the form of combination in which the iron is present.

Those iron compounds which are capable of easy reduction to the metal have an accelerating effect upon the reaction between carbon dioxide and coke, as measured by the Fuel Research method. During the course of a reactivity determination, this reducible iron is present as the metal at the Reactivity I stage and as ferrous oxide at the Reactivity III stage. The activating effect produced by the presence of metallic iron is large; that due to ferrous oxide is small.

Rendering Iron Inert

If a coke is treated in such a manner that the reducible iron is either removed or rendered inert, a close approximation to the Reactivity III value can be obtained without prolonged passage of carbon dioxide. Methods by which this can be accomplished are:—1. Removal of soluble iron compounds by extraction of a coke with mineral acids. 2. Treatment of a coke under suitable conditions with:—(*a*) hydrogen sulphide; (*b*) silicon dioxide; (*c*) titanium oxide; (*d*) aluminium oxide; all of which combine with the iron and render it inert.

A metallurgical coke containing no reducible iron gives a flat reactivity curve when examined by the Fuel Research method. The addition of reducible iron to such a coke increases the Reactivity I value and (if present in sufficient amount) may cause "reactivation" to take place, but has only a slight effect on the value of Reactivity III. A further treatment of the coke by any of the methods suggested for removing or inerting the iron results in a reactivity curve characteristic of the original untreated coke. Analytical determinations show that there is a relationship between the amount of reducible iron which a coke contains and the type of reactivity curve which it gives.

Catalytic Effect of Iron

A study of equilibrium conditions in the system, carbon dioxide, carbon monoxide, iron and ferrous oxide, enables the phenomenon of reactivation to be explained, and the conclusions with regard to the catalytic effect of iron in the metallic state to be verified. By variation of the conditions prevailing during the reaction, it is possible to cause the transformation of iron from the oxidic to the metallic phase or vice versa, with consequent activation or deactivation of the coke. This transformation has been caused either by variation of temperature, in which case a break is obtained in the temperature coefficient of the reaction, corresponding to the phase change, or by alteration of the CO/CO_2 ratio, in which case, under static conditions, a change in the velocity of reaction is observed.

It has been shown that the phenomenon of "reactivation," an auto-activation which takes place with certain cokes during the passage of nitrogen at an elevated temperature, is due to the reduction of iron oxide (by coke) to the metal. This behaviour is only observed with the cokes which contain the largest amounts of reducible iron. Metallurgical cokes contain some iron which is soluble but not reducible. By a process of oxidation at 450° C., it has been possible to cause a change in the composition of the iron, so that the amounts of both soluble and reducible iron are increased, causing in turn an increase in Reactivity I with a change in the shape of the curve. This treatment has been applied with success to metallurgical cokes, including two samples obtained from beehive ovens.

Attention has been directed to the possible effect of inorganic constituents other than iron. The results obtained show that, with a normal coke, the preponderating catalytic effect must be ascribed to the iron. It may be stated that Reactivity I represents the reactivity value of a coke under such conditions that the ash can exert its full catalytic effect. Reactivity III is the value obtained when the iron has been converted to ferrous oxide or otherwise rendered inert, and is a close approximation to the ash-free reactivity value of a coke.

The investigation is being carried out in co-operation with the National Federation of Iron and Steel Manufacturers, who are contributing to the cost. Other aspects of the general problem are being investigated by the Coke Research Committees—working under the auspices of the Federation—with whom the closest touch is kept, and many samples obtained from these committees have been tested.

Acid Cistern Explosion

Inquest on Two Widnes Men

AN inquest was held at Widnes on Friday into the deaths of two workers at the Pilkington-Sullivan works of the United Alkali Co., who were killed by the explosion of a stone cistern containing a mixture of hydrochloric acid and ferrous chloride. The victims were George Shaw (44), of Norton Street, Runcorn, and John Kilmartin (53), of Moss Bank Road, Widnes. They were at work on a platform outside the cistern some distance above ground level, when the explosion took place and the cistern collapsed, carrying with it the staging and the men. Shaw was killed instantly and Kilmartin died some time after arrival at hospital.

John Williams, the manager of the works, said that the tank had been used for 12 years, and similar tanks had been working 50 years without an accident. Asked by the coroner what caused the explosion, witness said it was the presence of hydrogen. It would, he said, require a spark or a flame to create the explosion, and he was unable to say what caused it. The men were wearing ordinary boots with nails in them. It was a reasonable theory to suggest that a spark might have been created through one of the men walking on the stone top of the tank. Since the accident an experiment had been made with the use of a hammer and chisel on the stone work of the tank and one or two sparks had been created.

The coroner said he understood that after the explosion a number of workmen rushed to the spot and, regardless of danger, worked hard to recover the bodies of the men. He wished to express his appreciation of their unselfish conduct.

The jury returned a verdict of "death from misadventure" and added that they were satisfied that there had been no negligence.

Chilean Nitrate Production

Shipments During First Quarter of 1930

CHILEAN nitrate production for the first quarter of 1930 amounted to 756,172 metric tons, reports the U.S. Acting Commercial Attaché in Santiago. Shipments for foreign countries for the same period reached a total of 589,870 metric tons, while the number of oficinas working at the close of the quarter was 53. The 40 oficinas in operation in Chile during April, 1930, produced 205,200 metric tons of sodium nitrate, against 271,200 in April, 1929. Exports totalled 78,800 tons compared with 218,400 tons for the same month in the previous year. World stocks at the end of April, 1930, amounted to 2,323,400 tons compared with 1,707,300 tons for April 1929. Details of the shipments during the first quarter of 1930 are as follows:

Country.	Metric tons	Country	Metric tons
Egypt	33,356	Cuba	1,981
Spain	508	Canada	1,524
France	23,368	Ecuador	3
Great Britain ..	1,016	British India	5,040
Great Britain or Continent (by orders) ..	197,246	East Indies	908
		Japan	14,469
Russia	7,112	Panama	3
United States ..	289,528	Peru	274
Hawaiian Islands ..	13,524		
Costa Rica	10	Total	589,871

From Week to Week

MR. P. W. TAINSH, chief chemist to Lever Brothers, Ltd., was among those who received honorary Masters' degrees at Liverpool University on Saturday.

A COMMITTEE has been set up by the French Government to investigate means of minimising the dangers attaching to the storage of compressed, liquefied or dissolved gases.

RARE ELEMENTS and new alloys formed part of the chemical display in the three days' scientific exhibition and fair opened at Highfields, Nottingham, on Thursday, July 3, to raise funds for Nottingham University College endowment fund.

RESEARCHES FOR POTASSIUM DEPOSITS in the Province of Navarra, Spain, are stated to have been successful, and preliminary borings have led to the belief that the layer, at its widest point, probably extends more than 300 ft. down.

MINERAL OIL, expressed in terms of crude oil and naphtha, produced in the United Kingdom from shale, during 1929, was stated by the Secretary for Mines (Mr. Shinwell) in the House of Commons on Tuesday, to have amounted to rather more than 40,000,000 gallons.

FIRE broke out recently in a range of buildings used as stillrooms at the chemical works of A. Boake Roberts and Co., Ltd., Carpenters Road, Stratford, and did considerable damage to the rooms and their contents. One employee was treated for burns to the face and arms at Queen Mary's Hospital.

THE GENERAL ASPHALT CO. has issued a circular to its stockholders announcing that the relations of the company and the Royal Dutch-Shell group "have reached a point where litigation has become necessary in order to enforce certain of the company's royalty rights in respect of the Vigas concessions in Venezuela."

SIR HENRY HADOW, the retiring Vice-Chancellor of Sheffield University, was on Tuesday presented with a complete set of glass tableware from the Glass Research Delegacy of the University. In handing over the gift, Mr. Frank Wood, chairman of the Delegacy, referred to the wonderful work Sir Henry had done in stimulating and practically making the Department of Glass Technology.

PERCY LESSEN WAIN, a wholesale chemist, was fined £500 on Friday, July 4, at Stafford Assizes, where he appeared to answer a number of charges of conspiring to defraud the Commissioners of Inland Revenue of large sums due in respect of income tax and excess profits duty. The judge observed that Wain had made a full disclosure to the authorities in 1927, and had made repayments amounting to £4,500. Two other men who were charged with Wain were found not guilty and discharged.

AS A RESULT OF NEGOTIATIONS between the directors of the Torbay Paint Co. and Pinchin, Johnson and Co., the latter company have offered six ordinary shares of 10s. each, fully paid, for every five ordinary shares of Torbay Paint. The offer, which has been received and accepted by the directors and their friends in respect of their own holdings, is conditional upon its acceptance on or before July 12 by the holders of 90 per cent. of the shares in the company not held by Pinchin, Johnson and Co. or its nominees.

DRUG HOUSES OF AUSTRALIA, LTD., with a nominal capital of £5,000,000, has been formed as a holding company, by eleven important drug firms in Australia. The amalgamating companies include Duerdin and Sainsbury, Ltd.; Felton, Grimwade and associated companies; Elliott Brothers; Taylor, Colledge Bickford and Sons; Taylor and Elliotts; and T. and E. Surgical, Ltd. It is understood that negotiations are also proceeding with the directors of Australian Drugs, Ltd., for a further amalgamation.

A DEPUTATION of London manufacturers, including representatives of the pottery, glass and metal working trades and other steam users, on Friday discussed with the Public Control Committee of the L.C.C. the objections of industry to the proposed by-laws restricting the emission of black smoke to two minutes in every half-hour. The Federation of British Industries is in entire agreement with the principle of this legislation, but it is felt that allowance should be made for cases where smoke emission is in no way due to culpable negligence, but arises from sudden emergencies.

MR. GREENWOOD, Minister of Health, will visit Castleford, Yorks, to-day, to inspect the area damaged by the chemical works explosion.

COAL TAR PRODUCTION in France during 1929 increased by 45,000 metric tons over the 1928 figure to 561,000 metric tons. The production at gas plants was 241,000 metric tons and at coke ovens 320,000 metric tons.

TWO WORKMEN were burned to death and four others seriously injured as the result of an explosion on Thursday, July 3, while they were repairing an apparatus used for the manufacture of liquid air at La Madeleine, near Lille, France.

DORMAN, LONG AND CO., LTD., are reported to have acquired an interest in the Tees-side Bridge and Engineering Co., Ltd., upon whose board Mr. Arthur Dorman and Mr. Charles Mitchell will have seats, though the management will remain the same.

A FURTHER SEIZURE OF DRUGS, amounting to over 400 lb. of heroin, took place at Marseilles last week on board the Italian steamer *Bulgaria*, which arrived there from Constantinople. Within ten days over 1¼ tons of cocaine, heroin, and morphine were seized.

RECENT WILLS include Mr. Herbert Edward Davies, of Eshe Road North, Blundellsands, consulting chemist, late of E. Davies and Sons, analytical chemists, of Liverpool, for twenty years public analyst for Birkenhead, Southport, St. Helens, and Lancaster (net personalty £13,167), £14,964.

THE NEW REFINERY which is to deal with nickel and copper matte and other concentrates for the International Nickel Co. and other copper producers at Copper Cliff, Northern Ontario, Canada, is now practically completed. It has cost £1,600,000, and is the largest refinery of its kind in the British Empire.

A SENTENCE of six months' hard labour was imposed at Wiltshire Quarter Sessions last week on Frank Smith, alias Paul Robinson, alias Meadows (37), a manufacturing chemist, of Bolton, who was charged with fraudulently converting £1 to his own use at Langley Burrell on June 30. Thirteen other charges were taken into consideration.

THE CHEMICAL INDUSTRIES ASSOCIATION of Japan is organising the third Chemical Industries Exhibition to be held in Tokio from March 20 to May 18, 1931. The closing date for the receipt of applications for space is December 31, 1930. A copy of the rules and regulations is available at the Department of Overseas Trade, 35, Old Queen Street, London.

A LIST has been issued for the United Kingdom, cancelling all similar previous lists, and setting out the goods the import or export of which is forbidden except under licence. Dyestuffs which cannot be imported except under Board of Trade or Home Office licence are: (1) all synthetic organic dyestuffs, (2) all colours or colouring matters containing synthetic organic dyestuffs, (3) all organic intermediate products used in the manufacture of any such dyestuffs, colours or colouring matters.

PROFESSOR ROBERT ROBINSON, Waynflete Professor of Chemistry in the University of Oxford, was on Monday elected a British Honorary Fellow of the Royal Society of Edinburgh. The Keith prize, awarded by the Council of the Society, was presented to Dr. Christina C. Miller by the President (Professor Sir E. A. Sharpey-Schafer), who remarked that the problem of the slow luminescent oxidation of phosphorus at which she had worked for some years was one of the most puzzling in chemical science, and had been attacked without much success by many chemists of distinction.

THE DIRECTORS of British Tintex and Dye Products have issued a circular to the shareholders stating that they consider the proposal to wind up the company most ill-advised at the present time, when the prospects ahead are very much brighter. Economies have been effected, the results of earlier advertising are becoming apparent, and a definite proposition which has just been received from a responsible firm in Australia for the purchase of Tintex products for that territory over the next three years, should show satisfactory net profits. The shareholders' committee which originally proposed voluntary liquidation has, since the above circular, issued a statement urging that a large number of the shareholders were convinced of the seriousness of the position of the company and demanded the convening of the necessary meeting to wind it up.

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Accepted Specifications

328,728. SYNTHETIC RESINS. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, December 24, 1928.

These products, which are very plastic and may be added to phthalic acid glycerin resins to produce flexible results, may be made by condensing adipic acid or its higher homologues containing a branched chain, with a polyhydric alcohol, with or without a mono or dibasic carboxylic acid. Several examples are given, and the use of sebacic acid is also referred to.

328,738. GAS PURIFICATION. A. C. Becker, 63, Edisonstrasse, Oberschoneweide, Berlin, and W. Bertelsmann, 18, Bondickstrasse, Waidmannslust, Berlin. Application date, March 18, 1929.

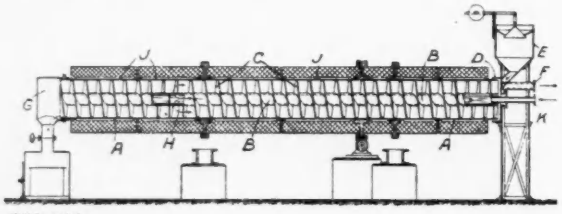
Gases are washed with solutions containing ferrous oxide to remove cyanogen compounds, ammonia and sulphuretted hydrogen, and sulphuretted hydrogen is fixed by additional ammonia obtained by decomposing ammonium sulphate by melting. The ammonium bisulphate obtained is used for revivifying the lye.

328,743. CALCIUM CYANAMIDE. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, March 21, 1929.

Calcium carbonate is heated to 650°-900° C. under conditions which enable the gases and vapours to be rapidly removed, *e.g.*, by heating under reduced pressure, or in presence of gases such as ammonia, carbon monoxide or nitrogen. Calcium cyanamide is obtained.

328,780. SODIUM SULPHATE. A. L. Mond, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, April 22, 1929.

A rotary tube A is heated by an electric heater divided into sections J, and is traversed by an axial tube B carrying a worm



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C. Small porous pellets of rock salt are fed into the tube A from the hopper E, and sulphur dioxide, air and steam are fed through the tube K into the tube B, where the gases are preheated. The gases issue through openings H into the tube A, pass in counter-current through the rock salt, and are discharged through tube F. The temperature is maintained at 460°-520° C., and the sodium sulphate produced is cooled and discharged at the hopper G. A catalyst is used, preferably 1 per cent. of flue dust from pyrite burners.

328,793. DYES. A. Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, May 1, 1929.

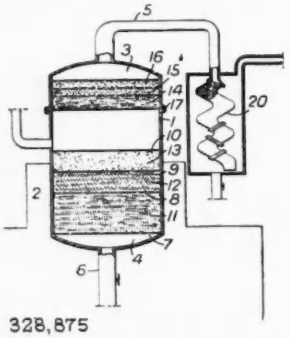
A β-mono- or diamino-anthracene is condensed with 1-chloro-anthraquinone-2-carboxylic acid, either in one stage to give an acridone, or through the anthracyl-1-aminoanthraquinone-2-carboxylic acid. Thus, 1-chloranthraquinone-2-carboxylic acid is condensed with β-anthramine in presence of naphthalene and oxalic acid. The products are vat dyes giving reddish to violet-brown shades.

328,818. CHLORINATING RUBBER. M. Deseniss, 55, Hagedornstrasse, and A. Nielsen, 14, Fehrsweg, both in Hamburg, Germany. Application date, May 16, 1929.

Raw rubber is dissolved or vulcanised rubber is dispersed in carbon tetrachloride at about boiling point, and chlorine is passed through under a reflux condenser until no more hydrochloric acid is formed. The chlorinated rubber may be made into films, etc.

328,875. DISTILLING AND PURIFYING OILS. J. H. de Lignac, 64, Boulevard Marcel, Sembat, St. Denis, France. Application date, July 22, 1929.

Liquid hydrocarbons are cracked and distilled in a still 1,



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containing layers 11, 12, 13 of nickel, copper and iron, respectively, in the proportion of 3 : 1 : 1. The vapour is passed through further layers of catalysts 14, 15, 16 in the same order and in the same proportions. The supporting grids 7 and 8 are of nickel, and the grids 9, 10 are of iron.

328,908. HYDROCARBONS AND COATING COMPOSITIONS. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, November 1, 1928.

Polymerisation products of butadiene, which are liquid only, are obtained by heating above 40° C. under a pressure of 200 atmospheres, in the presence of organic catalysts such as aliphatic or aromatic amines or inorganic catalysts such as finely divided metals, and in the presence of a diluent. A colourless oil may be obtained from butadiene at 150° C.–220° C., and a more viscous and quick drying oil at a temperature above 220° C. The oils are used to improve the adhesive power of lacquers, and binding agents such as glue. Examples are given of the polymerisation of butadiene at various temperatures and with various additions. Reference has been directed by the Comptroller to Specification No. 29277 of 1909.

328,933. CARBAZOLE DERIVATIVES. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, January 5, 1928.

2-Amino-carbazole is diazotised and heated with copper sulphate and sodium chloride to obtain 2-chlor-carbazole. 1-Amino-carbazole is diazotised, heated with potassium cyanide and copper sulphate and the resulting nitrile saponified with alcoholic potash to obtain carbazole-1-carboxylic acid. 2-Amino-carbazole is diazotised, saturated with sulphurous acid, and decomposed with copper powder till evolution of nitrogen ceases, and the residue is boiled with caustic soda lye and the sulphinic acid precipitated with mineral acid. The sulphonic acid is obtained by oxidation, and the mercaptan or disulphide by reduction.

328,963. PHOSPHORIC ACID ESTERS. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges, Frankfort-on-Main, Germany. Application date, July 31, 1929. Addition to 300,044.

Phosphorus oxychloride 1 molecular part is treated with a primary aliphatic alcohol or phenol 1–2 molecular parts, and the acid ester obtained is treated with a different aliphatic alcohol, or with a phenol if an aliphatic alcohol is used, in the first stage, to obtain a neutral mixed ester. In an example, phosphorus oxychloride 1 part is treated with isoamyl alcohol 2 parts, and the mixture heated at a reduced pressure of 50 mms. of mercury to 50° C. The mixture is cooled, and

excess of butyl alcohol added and the reaction continued a 40° C. to obtain N-butyl di-isoamyl phosphate.

328,988. Dyeing Artificial Silk. Imperial Chemical Industries, Ltd., Imperial Chemical House, Millbank, London, and R. Brightman, Crumpsall Vale Chemical Works, Blackley, Manchester. Application date, February 8, 1929.

Monoazo dyes obtained by coupling a diazotised oxamic acid of the benzidine series with a naphthol sulphonic acid, a naphthylamine sulphonic acid, a 1 : 8-aminonaphthol sulphonic acid, a 1 : 8-dioxynaphthalene sulphonic acid or an *m*-diamino-benzene derivative are used for dyeing regenerated cellulose materials, and an example is given of the use of the monoazo dye from dianisidine-oxamic acid and 1 : 8-aminonaphthol-3 : 6-disulphonic acid. Several other monoazo dyes are also specified.

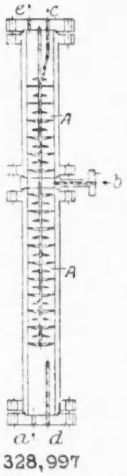
328,992. Destructive Hydrogenation. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date January 5, 1929.

Liquid or pasty carbonaceous materials are destructively hydrogenated in the presence of catalysts having such a density that they remain in permanent suspension in the liquid and do not sink to the lower part of the vessel. The catalyst, which should be immune to sulphur poisoning, may have its density reduced by additions or use of a carrier such as charcoal, kieselguhr or Florida earth. Alternatively, the carbonaceous material may have its density increased by an admixture. In an example, a brown coal tar fraction of density 0·82 is mixed with a catalyst obtained by impregnating wood charcoal granules with ammonium molybdate solution and reducing with hydrogen under pressure. The density of this catalyst is 0·85, and the mixture is treated with hydrogen at 460° C. and 200 atmospheres pressure. In another example, tar having a density of 0·96 has its density increased to 1·1 by adding anthracene oil, and the mixture is hydrogenated with a catalyst of density of 1·2 obtained by impregnating pumice wtih ammonium molybdate and reducing with hydrogen.

328,993. Dyes. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, February 11, 1929. Addition to 305, 679.

A dye which gives yellowish brown shades on cotton is obtained by heating 1-(Bzl-benzanthronyl-amino)-5-benzoylamino-anthraquinone with a mixture of aluminium chloride and sodium chloride.

328,997. Separating the Products of Destructive Hydrogenation and Pressure Treatment of Carbonaceous Materials. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, November 12, 1928.



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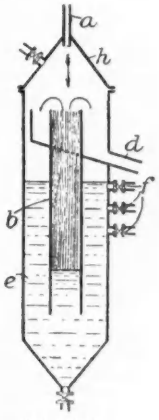
Vapour obtained by destructive hydrogenation or by pressure treatment of bituminous material is fractionated by contact with the crude materials to be treated, which are thus freed from low boiling constituents, or with the condensates or incondensible gases produced in the reaction. In an example, the vapour produced by treating topped American oil at 450°–460° C. and 200 atmospheres pressure in the presence of a catalyst from zinc oxide and molybdic acid, is passed with the hydrogenating gas through a pipe *a* into a fractionating column A containing staggered baffle plates. Crude oil is introduced through a pipe *c* and passes down in counter-current. The products leaving the column through pipe *e* boil below 350° C., and the products leaving through pipe *d* boil above 350° C. and are returned to the process.

329,000. Synthetic Rubber. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, January 5, 1929.

Soft films prepared from synthetic rubber, which may be vulcanised and may contain indiarubber, softening agents, fillers, etc., are treated with oxygen or oxygen-containing substances, with or without heating and pressure.

329,013. Clarification of Liquids. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, February 7, 1929.



329,013

Liquid to be clarified is projected through a pipe *a* on to the top of a column of the clarified liquid in a vessel *b*. Foam is produced and overflows the vessel *b* and escapes through an opening *d*. The clarified liquid collects in an outer vessel *e*, and may be drawn off through one of the outlets *f* which serve also to determine the level in the vessel *e*. A hood *h* is provided so that the clarification may be effected in the presence of any desired gas. To separate finely powdered solid substances by this method, they are made into suspensions and oily materials are added so that part of the solids is capable of being wetted, and is carried along by the foam, while the remainder sinks. The method may be used for separating sulphur from the solutions obtained in removing hydrogen sulphide from gases with sulphur dioxide, and the separation of sulphur and iron oxide obtained by removing hydrogen sulphide from gases by alkali and iron oxide.

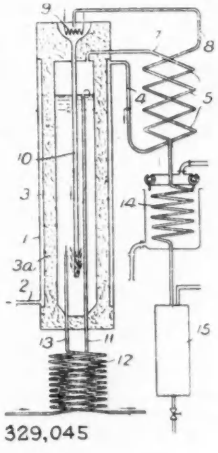
329,014. Dyeing Processes. Imperial Chemical Industries, Ltd., Millbank, London, and R. Brightman, Crumpsall Vale Chemical Works, Blackley, Manchester. Application date, February 7, 1929.

Viscose silk is dyed in level violet-blue to blue shades by disazo dyes obtained by coupling with a 1 : 8- or 2 : 8-aminonaphthol mono- or di-sulphonic acid, a diazoazo compound produced by diazotising the aminoazo compounds resulting from reduction of the nitro group or hydrolysis of the acetyl group of the monoazo dyes of the type *p*-nitraniline, *p*-aminoacetanilide, or a nuclear substitution derivative other than an alkoxy derivative, → a naphthol, a naphthol-sulphonic acid, or an N-substituted 2 : 8-aminonaphthol-sulphonic acid. A large number of examples are given.

329,032. Dehydrating Solid Substances. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, February 15, 1929.

Substances containing water as hydrate, water of crystallisation, adherent water, or adsorbed in the pores of hydro-gels, etc., are treated with gaseous ammonia to remove the water. In some cases addition compounds are formed which must then be decomposed by heating. The process is applicable to substances such as magnesium sulphate, sodium carbonate, sodium and potassium sulphate, calcium, iron, zinc and nickel chlorides.

329,045. Destructive Hydrogenation. W. R. Tate and H. P. Stephenson, Norton Hall, The Green, Norton-on-Tees, and Imperial Chemical Industries, Ltd., Millbank, London. Application date, February 21, 1929.



329,045

The hydrogen is heated to 100° C. by passing through a jacket 3 inside the wall 1 of a high-pressure converter, then to 300° C. by passing through coil 5 in heat exchange with the vapour issuing from the converter through pipe 7, and then to 500° C. by passing over an electric heater 9 to a pipe 10 projecting into the converter. The vapours are condensed in a coil 14 and the liquid products pass through pipe 13 and coil 12 in heat exchange with the incoming raw material.

329,041. Metal Oxides. Sir G. C. Marks, London. From R. H. Monk and J. Irwin, 20, St. Paul Street, West, Montreal, Canada. Application date, February 18, 1929.

Solutions of salts of amphoteric metals of the 4th group

are hydrolysed after adding an oxide of the same metal prepared by precipitation with an alkaline compound such as ammonia or sodium carbonate. The hydrated oxide settles rapidly.

NOTE.—Abstracts of the following specifications which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention :—307,304 (I.G. Farbenindustrie Akt.-Ges.), relating to aminoalcohols, see Vol. XX, p. 478; 307,305 (I.G. Farbenindustrie Akt.-Ges.), relating to aminoalkyl compounds, see Vol. XX, p. 479; 307,307 (I.G. Farbenindustrie Akt.-Ges.), relating to amino-substituted tertiary alcohols, see Vol. XX., p. 479; 315,700 (Federal Phosphorus Co.), relating to diammonium phosphate, see Vol. XXI, p. 266.

Specifications Accepted with Date of Application

304,326. Water-insoluble azo dyestuffs on the fibre, Manufacture of. I.G. Farbenindustrie Akt.-Ges. January 20, 1928. Addition to 284,257.

307,704. An azo dyestuff on the fibre, Manufacture of. I.G. Farbenindustrie Akt.-Ges. March 10, 1928.

308,220. Phenolic compounds, Manufacture of. I.G. Farbenindustrie Akt.-Ges. March 19, 1928. Addition to 288,308.

308,359. 6-sulphonic acids of quinizarin and its homologues, Manufacture of. I.G. Farbenindustrie Akt.-Ges. March 22, 1928.

308,599. Phosphoric acid and hydrogen, Production of. Bayerische Stickstoff-werke Akt.-Ges. March 24, 1928. Addition to 308,598.

308,617. Vat-dyestuffs, Manufacture of. I.G. Farbenindustrie Akt.-Ges. March 23, 1928.

309,169. Catalytic transformation of gases. Apparatus for. Soc. Anon. d'Ougree-Marihaye. April 7, 1928.

309,552. Acid wool dyestuffs, Manufacture of. I.G. Farbenindustrie Akt.-Ges. April 12, 1928. Addition to 299,721.

309,602. Hydrogen peroxide, Production of. Soc. l'Air Liquide, Soc. Anon pour l'etude et l'Exploitation des Procédés G. Claude. April 14, 1928.

318,149. Removing metals of the iron group from metal salt solutions, Method of. K. W. Palmer. August 28, 1928.

318,976. Aluminium oxide and pure carbonic acid. Process of preparing simultaneously. C. D'Asseev. September 13, 1928.

330,904. Sulphonation products of unsaturated hydroxy fatty acids, Manufacture of. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) March 18, 1929.

330,916. Aryl-acetic acids and substitution products thereof, Manufacture of. O. Y. Imray. (*I.G. Farbenindustrie Akt.-Ges.*) February 19, 1929.

330,918. Gaseous mixtures suitable for the synthesis of hydrocarbons, methanol, and other oxy-organic compounds. Production of. G. Natta. March 11, 1929.

330,919. Methyl alcohol, Manufacture of. G. Natta. March 11, 1929.

330,921. Isolation of fatty acids obtained by the oxidation of waxes. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) March 14, 1929.

330,922. Synthetic rubber-like substances. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) March 16, 1929.

330,933. Sulphur impurities, Removal of, from combustible gases. W. J. Huff, L. Logan, and O. W. Lusby. January 19, 1929.

330,934. Hydrocarbons of low boiling point from coal, oil or other materials, Process and apparatus for the production of H. S. Waite. February 20, 1929.

330,941. 2-aminonaphthalene-3-carboxylic acid, Manufacture of A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) March 20, 1929.

330,945–7. Sulphate of ammonia, Production of. W. G. Adam, D. G. Murdoch, and Gas Light and Coke Co. March 20, 1929.

330,981. Vulcanisation of rubber. Rubber Service Laboratories Co. November 12, 1928.

331,016. N : N-thio derivatives of amines. Imperial Chemical Industries, Ltd., T. Birchall and S. Coffey. April 18, 1929.

331,056. Azo-dyestuffs on the fibre, Production of. W. W. Groves. (*I.G. Farbenindustrie Akt.-Ges.*) May 23, 1929.

331,100. Oxygenated organic compounds, Manufacture of. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) June 28, 1929.

Applications for Patents

[In the case of applications for patents under the International Convention, the priority date (that is, the original application date abroad which the applicant desires shall be accorded to the patent) is given in brachets, with the name of the country of origin. Specifications of such applications are open to inspection at the Patent Office on the anniversary of the date given in brackets, whether or not they have been accepted.]

Adler, O., and Adler, R. Production of molecular compounds of salts of phenyl-quinoline carboxylic acids with alkylated pyrazolones, etc. 20,372. July 4. (Czecho-Slovakia, November 14, 1929.)

Baird, W., and Imperial Chemical Industries, Ltd. Derivatives of polyhydric-alcohol-polybasic-acid condensation products. 20,193. July 3.

Bangham, P. F., Imperial Chemical Industries, Ltd., and Thomson, R. F. Manufacture of dyes, etc. 19,930. July 1.

British Celanese, Ltd. Colouration of textile materials. 20,038. July 2. (United States, July 2, 1929.)

Bruzac, J. F. A. Purifying hydrocarbons. 19,962. July 1.

Calco Chemical Co., Inc. and Thurston, A. P. Shellac composition. 20,079. July 2.

Caro, N., and Frank, A. R. Production of nitric acid from ammonia. 20,003. July 1. (August 13, 1929.)

Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of dichloro-2-methyl-anthraquinones. 19,873. June 30.

—— Manufacture of stable water soluble yellow sulphuric acid ester. 19,874. June 30.

—— Manufacture of new products. 19,875. June 30.

—— Manufacture of fast vat dyestuffs. 20,001. July 1.

—— Manufacture of vat dyestuffs. 20,129. July 2.

—— Manufacture of azo dyestuffs. 20,130. July 2.

—— Manufacture of sodium sulphate. 20,131. July 2.

—— Manufacture of carbazole-2-7 di-sulphonic acid. 20,132. July 2.

—— Ketonehydrazones of phenylhydrazine-ortho-sulphonic acid 20,238. July 3.

—— Azo dyestuffs. 20,239. July 3.

—— Mercapto disulphides. 20,240. July 3.

—— Conversion products of polysaccharides. 20,241. July 3.

—— Manufacture of caustic alkalies. 20,363. July 4.

—— Manufacture of acetic anhydride. 20,364. July 4.

—— Manufacture of complex salts of aromatic compounds. 20,444. July 5.

—— Manufacture of new products. 20,445. July 5.

Chemische Fabrik Kalk Ges. Producing concentrated gaseous hydrochloric acid. 20,169. July 3. (Germany, April 22.)

Chemische Fabrik vorm. Sandoz. Preparation of dyestuffs. 20,461 July 5. (Germany, July 12, 1929.)

Coley, H. E. Manufacture of metallic nitrides and ammonia from nitrogen. 20,318. July 4.

—— Manufacture of zinc. 20,319. July 4.

—— Manufacture of cyanides from nitrogen. 20,320. July 4.

—— Manufacture of alloys. 20,321. July 4.

—— Reduction of carbonates and bicarbonates. 20,322. July 4.

—— Reduction of sulphates. 20,323. July 4.

—— Extraction of gold from arsenical ores. 20,324. July 4.

Dutt, E. E. Preparation of nickel catalysts. 19,979. July 1.

Francis, W., and Imperial Chemical Industries, Ltd. Apparatus for carrying out chemical reactions. 19,877. June 30.

Geigy Soc. Anon., J. R. Manufacture of monoazo dyestuffs. 20,340. July 4. (France, July 4, 1929.)

Greenstreet, C. J. Distillation of materials containing hydrocarbons. 20,125. July 2.

Grieb, C. M. W. Production of carbonyls. 20,436. July 5.

Groves, W. W. and I.G. Farbenindustrie Akt.-Ges. Manufacture of arylides of unsymmetrical ortho-xylenol-carboxylic acid. 19,811. June 30.

—— Manufacture of solutions of fibroin. 19,812. June 30.

I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of solid carbon dioxide. 19,815. June 30.

—— Manufacture of electrodes for secondary cells. 19,816. June 30.

—— Manufacture of enamelled wires. 19,817. June 30.

—— Manufacture of lubricating oils. 19,818. June 30.

—— Concentration of aqueous formic acid. 20,437. July 5.

—— Manufacture of emulsifiable tars, etc. 20,438. July 5.

—— Mercerising-liquors. 20,439. July 5.

—— Manufacture of complex salts of aromatic compounds. 20,444. July 5.

—— Manufacture of new compounds. 20,445. July 5.

I.G. Farbenindustrie Akt.-Ges. Recording or regulating level of liquids in containers. 19,876. June 30. (Germany, June 28, 1929.)

—— Sound and picture films. 19,950. July 1. (Germany, July 1, 1929.)

—— Manufacture of susbtitution products of dibenzpyrenequinone series. 20,326. July 4. (Germany, July 6, 1929.)

—— Indicating etc. level of liquids. 20,365. July 4.

—— Manufacture of masses resembling hard rubber. 20,448 July 5. (Germany, July 5, 1929.)

Imperial Chemical Industries, Ltd. Coating materials. 20,219. July 3. (November 4, 1924.)

—— Removal of dust from gases. 20,299, 20,300, 20,301. July 4.

—— Treatment of felt. 20,302. July 4.

Kane, T. and Strange, E. H. Manufacture of aldehydes or ketones, etc. 20,411. July 5.

—— Manufacture of esters from alkenes, etc. 20,412. July 5.

Llewellyn, W. B., Spence, H. and P. Spence and Sons, Ltd. Titanium compounds. 20,395. July 5.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.

ACID, CHROMIC.—1s. 0¾d. per lb. d/d U.K.

ACID HYDROCHLORIC.—Spot, 3s. 9d. to 6s. per carboy d/d, according to purity, strength and locality.

ACID NITRIC, 80° Tw.—Spot £20 to £25 per ton, makers' works according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA (ANHYDROUS).—Spot, 11d. per lb., d/d in cylinders.

AMMONIUM BICHROMATE.—8d. per lb. d/d U.K.

BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages free.

BLEACHING POWDER, 35/37%.—Spot, £7 10s. per ton d/d station in casks, special terms for contracts.

BORAX, COMMERCIAL.—Crystals, £13 10s. per ton; granulated, £12 10s. per ton; powder, £14 per ton. (Packed in 1 cwt. bags carriage paid any station in Great Britain. Prices quoted are for one ton lots and upwards).

CALCIUM CHLORIDE (SOLID), 70/75%.—Spot, £4 15s. to £5 5s. per ton d/d in drums.

CHROMIUM OXIDE.—9½d. and 10d. per lb. according to quantity d/d U.K.

CHROMETAN.—Crystals, 3⅜d. per lb. Liquor, £18 15s. per ton d/d U.K.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 61 O.P.—Industrial, 1s. 7d. to 1s. 11d. per gall. pyridinised industrial, 1s. 9d. to 2s. 1d. per gall.; mineralised 2s. 8d. to 2s. 11d. per gall. 64 O.P., 1d. extra in all cases. Prices according to quantity.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE CRYSTALS AND GRANULAR.—4½d. per lb. nett d/d U.K., discount according to quantity; ground ½d. per lb. extra.

POTASSIUM CHLORATE.—3¾d. per lb., ex-wharf, London, in cwt. kegs.

POTASSIUM CHROMATE.—8d. per lb. d/d U.K.

SALAMMONIAC.—Firsts lump, spot, £42 10s. per ton d/d station in barrels. Chloride of ammonia, £37 to £45 per ton, carr. paid.

SALT CAKE, UNGROUND.—Spot, £3 7s. 6d. per ton d/d station in bulk.

SODA ASH, 58° E.—Spot, £6 per ton, f.o.r. in bags, special terms for contracts.

SODA CAUSTIC, SOLID, 76/77°E.—Spot, £14 10s. per ton, d/d station.

SODA CRYSTALS.—Spot, £5 to £5 5s. per ton, d/d station or ex depot in 2 cwt. bags.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE, REFINED.—Spot, £10 10s. per ton d/d station in bags.

SODIUM BICHROMATE CRYSTALS.—3⅜d. per lb. nett d/d U.K., discount according to quantity. Anhydrous ¾d. per lb. extra.

SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton delivered for home market, 1-cwt. drums included; £15 10s. f.o.b. London.

SODIUM CHLORATE.—2¾d. per lb.

SODIUM CHROMATE.—3½d. per lb. d/d U.K.

SODIUM NITRITE.—Spot, £19 per ton, d/d station in drums.

SODIUM PHOSPHATE.—£14 per ton, f.o.b. London, casks free.

SODIUM SILICATE, 140° Tw.—Spot, £8 5s. per ton, d/d station returnable drums.

SODIUM SULPHATE (GLAUBER SALTS).—Spot, £4 2s. 6d. per ton, d/d address in bags.

SODIUM SULPHIDE SOLID, 60/62%.—Spot, £10 5s. per ton d/d station in drums. Crystals—Spot, £7 10s. per ton d/d station in returnable casks.

SODIUM SULPHITE, PEA CRYSTALS.—Spot, £13 10s. per ton, d/d station in kegs Commercial—Spot, £9 per ton, d/d station in bags.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—7d. to 7½d. per lb. Crude 60's, 2s. to 2s. 5d. per gall. July/December.

ACID CRESYLIC 99/100.—2s. 2d. to 2s. 4d. per gall. B.P., 5s. per gall. 97/99.—2s. 1d. to 2s. 2d. per gall. Refined, 2s. 7d. to 2s. 10d. per gall. Pale, 95%, 1s. 9d. to 1s. 10d. per gall. 98%, 2s. to 2s. 1d. Dark, 1s. 6d. to 1s. 8d.

ANTHRACENE.—A quality, 2d. to 2½d. per unit. 40%, £4 10s. per ton.

ANTHRACENE OIL, STRAINED, 1080/1090.—4¾d. to 5½d. per gall. 1100, 5½d. to 6d. per gall.; 1110, 6d. to 6½d. per gall. Unstrained (Prices only nominal).

BENZOLE.—Prices at works: Crude, 10d. to 11d. per gall.; Standard Motor, 1s. 5d. to 1s. 6d. per gall.; 90%, 1s. 7d. to 1s. 8d. per gall.; Pure, 1s. 10d. to 1s. 11d. per gall.

TOLUOLE.—90%, 1s. 9d. to 1s. 11d. per gall. Pure, 1s. 11d. to 2s. 3d. per gall.

XYLOL.—1s. 5d. to 1s. 10d. per gall. Pure, 1s. 8d. to 2s. 1d. per gall

CREOSOTE.—Cresylic, 20/24%, 6¾d. to 7d. per gall.; Heavy, for Export, 6¼d. to 6¾d. per gall. Home, 4d. per gall. d/d. Middle oil, 4½d. to 5d. per gall. Standard specification, 3d. to 4d. per gall. Light gravity, 1½d. to 1¾d. per gall. ex works. Salty, 7½d. per gall.

NAPHTHA.—Crude, 8½d. to 8¾d. per gall. Solvent, 90/160, 1s. 3d. to 1s. 3½d. per gall. Solvent, 95/160, 1s. 4d. to 1s. 6d. per gall. Solvent 90/190, 1s. to 1s. 2½d. per gall.

NAPHTHALENE, CRUDE.—Drained Creosote Salts, £4 10s. to £5 per ton. Whizzed, £4 10s. per ton. Hot pressed, £8 per ton.

NAPHTHALENE.—Crystals, £12 5s. per ton. Purified Crystals, £14 10s. per ton. Flaked, £14 to £15 per ton.

PITCH.—Medium soft, 46s. to 47s. 6d. per ton, f.o.b., according to district. Nominal.

PYRIDINE.—90/140, 3s. 9d. to 4s. per gall. 90/160, 3s. 6d. to 3s. 9d. per gall. 90/180, 1s. 9d. to 2s. 3d. per gall. Heavy prices only nominal.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—6s. per lb. 100%.

ACID GAMMA.—Spot, 3s. 9d. per lb. 100% d/d buyer's works.

ACID H.—Spot, 2s. 3d. per lb. 100% d/d buyer's works.

ACID NAPHTHIONIC.—1s. 5d. per lb. 100% d/d buyer's works.

ACID NEVILLE AND WINTHER.—Spot, 2s. 7d. per lb. 100% d/d buyer's works.

ACID SULPHANILIC.—Spot, 8½d. per lb. 100% d/d buyer's works.

ANILINE OIL.—Spot, 8½d. per lb., drums extra, d/d buyer's works.

ANILINE SALTS.—Spot, 8½d. per lb. d/d buyer's works.

BENZALDEHYDE.—Spot, 1s. 8d. per lb., packages extra, d/d buyer's works.

BENZIDINE BASE.—Spot, 2s. 6d. per lb. 100% d/d buyer's works.

BENZOIC ACID.—Spot, 1s. 8½d. per lb. d/d buyer's works.

o-CRESOL 30/31° C.—£3 1s. 10d. per cwt., in 1 ton lots.

m-CRESOL 98/100%.—2s. 9d. per lb., in ton lots.

p-CRESOL 34·5° C.—1s. 9½d. per lb., in ton lots.

DICHLORANILINE.—1s. 10d. per lb. f.o.r. works.

DIMETHYLANILINE.—Spot, 1s. 9½d. per lb., drums extra d/d buyer's works.

DINITROBENZENE.—8d. per lb.

DINITROCHLORBENZENE.—£74 per ton d/d.

DINITROTOLUENE.—48/50° C., 7½d. per lb.; 66/68° C., 9d. per lb. f.o.r. works.

DIPHENYLAMINE.—Spot, 1s. 8d. per lb. d/d buyer's works.

a-NAPHTHOL.—Spot, 1s. 11d. per lb. d/d buyer's works.

B-NAPHTHOL.—Spot, £65 per ton in 1 ton lots, d/d buyer's works.

a-NAPHTHYLAMINE.—Spot, 1s. per lb. d/d buyer's works.

B-NAPHTHYLAMINE.—Spot, 2s. 9d. per lb. d/d buyer's works.

o-NITRANILINE.—5s. 11d. per lb.

m-NITRANILINE.—Spot, 2s. 6d. per lb. d/d buyer's works.

p-NITRANILINE.—Spot, 1s. 8d. per lb. d/d buyer's works.

NITROBENZENE.—Spot, 6½d. per lb, 5-cwt. lots, drums extra, d/d buyer's works.

NITRONAPHTHALENE.—9d. per lb.

R. SALT.—Spot, 2s. per lb. 100% d/d buyer's works.

SODIUM NAPHTHIONATE.—Spot, 1s. 6½d. per lb. 100% d/d buyer's works.

o-TOLUIDINE.—Spot, 8d. per lb., drums extra, d/d buyer's works.

p-TOLUIDINE.—Spot, 1s. 9d. per lb. d/d buyer's works.

m-XYLIDINE ACETATE.—3s. 1d. per lb. ex works.

Wood Distillation Products

ACETATE OF LIME.—Brown, £9 15s. to £10 5s. per ton. Grey, £16 10s. to £17 10s. per ton. Liquor, 9d. per gall.

ACETONE.—£78 per ton.

CHARCOAL.—£6 to £8 10s. per ton, according to grade and locality.

IRON LIQUOR.—1s. 3d. per gall. 32° Tw. 1s. per gall. 24° Tw.

WOOD CREOSOTE.—1s. 9d. per gall., unrefined.

WOOD NAPHTHA, MISCIBLE.—3s. 8d. to 3s. 11d per gall. Solvent, 4s. to 4s. 3d. per gall.

WOOD TAR.—£3 10s. to £4 10s. per ton

BROWN SUGAR OF LEAD.—£38 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 3d. per lb. according to quality; Crimson, 1s. 3d. to 1s. 5d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—1s. 8d. to 1s. 10d. per lb.

BARYTES.—£5 10s. to £7 per ton, according to quality.

CADMIUM SULPHIDE.—5s. to 6s. per lb.

CARBON BISULPHIDE.—£26 to £28 per ton, according to quantity; drums extra

CARBON BLACK.—4 1/16 d. to 4½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£40 to £50 per ton, according to quantity, drums extra.

CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.
DIPHENYLGUANIDINE.—2s. 9d. per lb.
LITHOPONE, 30%.—£20 to £22 per ton.
SULPHUR.—£9 10s. to £13 per ton, according to quality.
SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra.
SULPHUR PRECIP. B.P.—£55 to £60 per ton, according to quantity.
ZINC SULPHIDE.—8d. to 11d. per lb

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£37 per ton, ex wharf London, barrels free.
ACID, ACETYL SALICYLIC.—2s. 9d. to 2s. 11d. per lb., according to quantity.
ACID, BENZOIC B.P.—2s. to 2s. 3d. per lb., for synthetic product, according to quantity. Solely ex Gum, 1s. 6d. per oz.; 50-oz. lots, 1s. 3d. per oz.
ACID, BORIC B.P.—Crystal, £31 per ton; powder, £32 per ton; For one ton lots and upwards. Packed in 1-cwt. bags carriage paid any station in Great Britain.
ACID, CAMPHORIC.—19s. to 21s. per lb.
ACID, CITRIC.—1s. 6d. to 1s. 6¾d. per lb., less 5%.
ACID, GALLIC.—2s. 11d. per lb. for pure crystal, in cwt. lots.
ACID, MOLYBDIC.—5s. 3d. per lb. in ¼ cwt. lots. Packages extra. Special prices for quantities and contracts.
ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d.
ACID, SALICYLIC, B.P. PULV.—1s. 5d. to 1s. 8d. per lb. Technical.—1s. to 1s. 2d. per lb.
ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.
ACID, TARTARIC.—1s. 1¾d. per lb., less 5%.
ACETANILIDE.—1s. 5d. to 1s. 8d. per lb. for quantities.
AMIDOL.—7s. 6d. to 9s. per lb., d/d.
AMIDOPYRIN.—7s. 9d. to 8s. per lb.
AMMONIUM BENZOATE.—3s. 3d. to 3s. 9d. per lb., according to quantity. 18s. per lb. ex Gum.
AMMONIUM CARBONATE B.P.—£36 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimated, 1s. per lb.
AMMONIUM MOLYBDATE.—4s. 9d. per lb. in ¼ cwt. lots. Packages extra. Special prices for quantities and contracts.
ATROPHINE SULPHATE.—9s. per oz.
BARBITONE.—5s. 9d. to 6s. per lb.
BENZONAPHTHOL.—3s. to 3s. 3d. per lb.
BISMUTH CARBONATE.—6s. 6d. per lb.
BISMUTH CITRATE.—6s. 9d. per lb.
BISMUTH SALICYLATE.—6s. 7d. per lb.
BISMUTH SUBNITRATE.—5s. 6d. per lb.
BISMUTH NITRATE.—Cryst. 4s. 4d. per lb.
BISMUTH OXIDE.—8s. 6d. per lb.
BISMUTH SUBCHLORIDE.—8s. per lb.
BISMUTH SUBGALLATE.—6s. 9d. per lb. Extra and reduced prices for smaller and larger quantities of all bismuth salts respectively.
BISMUTHI ET AMMON LIQUOR.—Cit. B.P. in W. Qts. 1s. 0½d. per lb.; 12 W. Qts. 11½d. per lb.; 36 W. Qts. 11d. per lb.
BORAX B.P.—Crystal, £21 10s. per ton; powder, £22 per ton; For one ton lots and upwards. Packed in 1-cwt. bags carriage paid any station in Great Britain.
BROMIDES.—Ammonium, 1s. 9d. per lb.; potassium, 1s. 5½d. per lb.; granular, 1s. 5d. per lb.; sodium, 1s. 8d. per lb. Prices for 1 cwt. lots.
CALCIUM LACTATE.—B.P., 1s. 1½d. to 1s. 3d. per lb., in 1-cwt. lots.
CAMPHOR.—Refined flowers, 3s. to 3s. 2d. per lb., according to quantity; also special contract prices.
CHLORAL HYDRATE.—3s. 1d. to 3s. 4d. per lb.
CHLOROFORM.—2s. 4½d. to 2s. 7½d. per lb., according to quantity.
CREOSOTE CARBONATE.—6s. per lb.
ETHERS.—S.G. ·730—1s. to 1s. 1d. per lb., according to quantity; other gravities at proportionate prices.
FORMALDEHYDE, 40%.—37s. per cwt., in barrels, ex wharf.
GUAIACOL CARBONATE.—4s. 6d. to 4s. 9d. per lb.
HEXAMINE.—2s. 3d. to 2s. 6d. per lb.
HOMATROPINE HYDROBROMIDE.—30s. per oz.
HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.
HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. B.P., 10 vols., 2s. to 2s. 3d. per gall.; 20 vols., 3s. per gall.
HYDROQUINONE.—3s. 9d. to 4s. per lb., in cwt. lots.
HYPOPHOSPHITES.—Calcium, 2s. 5d. per lb.; potassium, 2s. 8½d. per lb.; sodium, 2s. 7½d. per lb., in 1 cwt. lots, assorted.
IRON AMMONIUM CITRATE.—B.P., 2s. 5d. per lb. for 28 lb. lots. Green, 3s. 1d. per lb., list price. U.S.P., 2s. 4d. to 2s. 7d. per lb.
IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.
IRON QUININE CITRATE.—B.P., 8½d. to 8¾d. per oz., according to quantity.
MAGNESIUM CARBONATE.—Light commercial, £31 per ton net.
MAGNESIUM OXIDE.—Light commercial, £62 10s. per ton, less 2½%; Heavy commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb.
MENTHOL.—A.B.R. recrystallised B.P., 17s. per lb. net; Synthetic, 9s. 6d. to 11s. per lb.; Synthetic detached crystals, 9s. 6d. to 11s. per lb., according to quantity; Liquid (95%), 9s. per lb.
MERCURIALS B.P.—Up to 1 cwt. lots, Red Oxide, crystals, 8s. 4d to 8s. 5d. per lb., levig., 7s. 10d. to 7s. 11d. per lb.; Corrosive Sublimate, Lump, 6s. 7d. to 6s. 8d. per lb., Powder, 6s. to 6s. 1d. per lb.; White Precipitate, Lump, 6s. 9d. to 6s. 10d. per lb., Powder, 6s. 10d. to 6s. 11d. per lb., Extra Fine, 6s. 11d. to 7s. per lb.; Calomel, 7s. 2d. to 7s. 3d. per lb.; Yellow Oxide, 7s. 8d. to 7s. 9d. per lb.; Persulph, B.P.C., 6s. 11d. to 7s. per lb.; Sulph. nig., 6s. 8d. to 6s. 9d. per lb. Special prices for larger quantities.
METHYL SALICYLATE.—1s. 3d. to 1s. 5d. per lb
METHYL SULPHONAL.—18s. 6d. to 20s. per lb.
METOL.—9s. to 11s. 6d. per lb. British make.
PARAFORMALDEHYDE.—1s 9d. per lb. for 100% powder.
PARALDEHYDE.—1s. 4d. per lb.
PHENACETIN.—3s. 9d. to 4s. 1d. per lb.
PHENAZONE.—5s. 6d. per lb.
PHENOLPHTHALEIN.—5s. 11d. to 6s. 1½d. per lb.
POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—92s. 6d. per cwt., less 2½ per cent.
POTASSIUM CITRATE.—B.P.C., 2s. 3d. per lb. in 28 lb. lots. Smaller quantities 1d. per lb. more.
POTASSIUM FERRICYANIDE.—1s. 7½d. per lb., in 125 lb. kegs
POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb., according to quantity.
POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included f.o.r. London.
POTASSIUM PERMANGANATE.—B.P. crystals, 5½d per lb., spot.
QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz., bulk in 100 oz. tins
RESORCIN.—2s. 10d. to 3s. per lb., spot.
SACCHARIN.—43s. 6d. per lb.
SODIUM BENZOATE B.P.—1s. 9d. per lb. for 1-cwt. lots.
SODIUM CITRATE, B.P.C., 1911, AND U.S.P. VIII.—1s. 11d. per lb., B.P.C. 1923, and U.S.P. IX—2s. 3d. per lb. Prices for 28 lb. lots. Smaller quantities 1d. per lb. more.
SODIUM FERROCYANIDE.—4d. per lb., carriage paid.
SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 per ton, d/d consignee's station in 1-cwt. kegs.
SODIUM NITROPRUSSIDE.—16s. per lb.
SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—95s. to 100s. per cwt. net. Crystals, 2s. 6d. per cwt. extra.
SODIUM SALICYLATE.—Powder, 1s. 10d. to 2s. 2d. per lb. Crystal, 1s. 11d. to 2s. 3d. per lb.
SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 2d. per lb.
SODIUM SULPHITE, ANHYDROUS.—£27 10s. to £29 10s. per ton, according to quantity. Delivered U.K.
SULPHONAL.—9s. 6d. to 10s. per lb.
TARTAR EMETIC, B.P.—Crystal or powder, 1s. 9d. to 2s. per lb.
THYMOL.—Puriss, 8s. 3½d. to 9s. 2d. per lb., according to quantity. Natural, 12s. per lb.

Perfumery Chemicals

ACETOPHENONE.—7s. per lb.
AUBEPINE (EX ANETHOL).—12s. per lb.
AMYL ACETATE.—2s. 6d. per lb.
AMYL BUTYRATE.—5s. per lb.
AMYL CINNAMIC ALDEHYDE.—11s. per lb.
AMYL SALICYLATE.—3s. per lb.
ANETHOL (M.P. 21/22° C.).—8s. per lb.
BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.
BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. per lb
BENZYL ALCOHOL FREE FROM CHLORINE.—2s. per lb.
BENZYL BENZOATE.—2s. 6d. per lb.
CINNAMIC ALDEHYDE NATURAL.—13s. 3d. per lb.
COUMARIN.—12s. per lb.
CITRONELLOL.—10s. per lb.
CITRAL.—8s. per lb.
ETHYL CINNAMATE.—6s. 6d. per lb.
ETHYL PHTHALATE.—2s. 9d. per lb.
EUGENOL.—9s. 6d. per lb.
GERANIOL (PALMAROSA).—18s. per lb.
GERANIOL.—7s. 6d. to 10s. per lb.
HELIOTROPINE.—6s. 6d. per lb.
ISO EUGENOL.—11s. 9d. per lb.
PHENYL ETHYL ACETATE.—11s. per lb.
PHENYL ETHYL ALCOHOL.—9s. per lb.
RHODINOL.—46s. per lb.
SAFROL.—2s. per lb.
TERPINEOL.—1s. 6d. per lb.
VANILLIN, EX CLOVE OIL.—13s. to 15s. per lb. Ex Guaiacol, 12s. 6d. to 13s. 9d. per lb.

Essential Oils

ALMOND OIL.—Foreign S.P.A., 10s. per lb.
ANISE OIL.—5s. per lb.
BERGAMOT OIL.—10s. 6d per lb.
BOURBON GERANIUM OIL.—20s. per lb.
CAMPHOR.—White, 2s. per lb.
CANANGA.—Java, 9s. 9d. per lb.
CASSIA OIL, 80/85%.—4s. 9d. per lb.
CINNAMON OIL LEAF.—6s. 9d. per oz.
CITRONELLA OIL.—Java, 2s. 7d. per lb., c.i.f. U.K. port.
LAVENDER.—Mont Blanc, 38 to 40%, 11s. per lb.
PALMA ROSA.—10s. 9d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.*

London, July 10, 1930.

THE improved conditions continue and there is quite a fair demand for the various chemicals. Export business also shows an improvement.

General Chemicals

ACETONE—Continues firm and in steady demand at £71 10s. to £80 per ton, according to quantity.

ACID ACETIC—In very good request. Technical, 80%, at £36 10s.; edible 80%, £37 per ton.

ACID CITRIC.—Rather slow at 1s. 6½d. to 1s. 7d. per lb., less 5%.

ACID LACTIC.—Firm at £42 for 50% by weight, pale quality, and in steady request.

ACID OXALIC.—The improved demand continues with price firm at £30 7s. 6d. to £32 per ton, according to quantity.

SULPHATE OF ALUMINA.—Unchanged and firm at £8 to £8 15s. per ton for the 17/18% iron free quality.

ARSENIC.—Steady, at £15 15s. per ton, free on rails at mines.

CREAM OF TARTAR.—A little easier at about 92s. to 92s. 6d. per cwt., ex wharf London, with a better demand.

COPPER SULPHATE.—£21 10s. to £22 per ton, free on rails at mines and in steady demand.

FORMALDEHYDE.—Easier at £32 per ton, but in good demand.

LEAD ACETATE.—Firm at £40 per ton for white and £39 per ton for brown.

LEAD NITRATE.—£30 to £32 per ton according to quantity and in rather slow demand.

LITHOPONE.—Steady at £19 15s. to £23 per ton, according to grade.

CARBONATE OF POTASH.—£27 per ton for 96/98% arsenic free quality

PERMANGANATE OF POTASH.—Firm and in good demand at 5½d. per lb., for the B.P. needle crystals.

SODIUM BICHROMATE.—In steady demand at 3⅜d. per lb., with discounts for quantities.

SODA HYPOSULPHITE.—Commercial crystals, £8 10s. per ton; photographic crystals in good demand at £14 15s. per ton.

SODIUM SULPHIDE.—Steady at British maker's prices.

TARTAR EMETIC.—Continues rather slow at about 11d. per lb.

ZINC SULPHATE.—Unchanged at £12 10s. per ton.

Coal Tar Products

THE market for coal tar products is quiet, but prices remain steady.

MOTOR BENZOL.—Firm, at about 1s. 5½d. to 1s. 6½d. per gallon f.o.r.

SOLVENT NAPHTHA.—Remains at about 1s. 2½d. to 1s. 3d. per gallon f.o.r.

HEAVY NAPHTHA.—Quoted at about 1s. 1d. per gallon f.o.r.

CREOSOTE OIL.—Unchanged at 3d. to 3½d. per gallon f.o.r. in the North, and at 4d. to 4½d. per gallon in London.

CRESYLIC ACID.—Remains at 2s. per gallon for the 98/100% quality, and at 1s. 10d. per gallon ex works for the dark quality 95/97%.

NAPHTHALENES.—The firelighter quality is quoted at £3 10s. to £3 15s. per ton, the 74/76 quality at £4 to £4 5s. per ton, and the 76/78 quality at about £5.

PITCH.—Worth 37s. 6d. to 42s. 6d. per ton, f.o.b. East Coast Port, with little demand.

The following additional prices have been received :—

CARBOLIC ACID.—Quoted at 7d. to 7½d. per lb. in bulk packing according to quantity. The market is quiet but prices are fairly well maintained.

CRESYLIC ACID, 98/100%.—Unchanged at 1s. 11d. to 2s. per gallon. Refined and special grades 2s. 6d. to 2s. 8d. per gallon. A little more interest generally is indicated in Cresylic acid.

PHENOLPHTHALEIN.—Quoted at 5s. 11d. to 6s. 1½d. per lb.

PHENACETIN.—Unchanged at 3s. 9d. to 4s. 1d. per lb.

ACETYL SALICYLIC ACID B.P.—Quite a fair amount of business is noted for the time of the year at the previous level of prices—2s. 9d. to 2s. 11d for home trade

SACCHARIN —Insoluble 550 is quoted at 43s. 6d. per lb. duty paid, soluble 500 being 2s. per lb. less.

Nitrogen Fertilisers

Sulphate of Ammonia.—Export.—Although the large producers have not yet announced prices, it is expected that low prices will be in operation for the coming months. In anticipation of this, the price has fallen to £6 17s. 6d. per ton, f.o.b. U.K. port, in single bags, basis 20·6 per cent. nitrogen. *Home.*—No fresh prices have been announced in the home market. In the meantime small sales are being made at the March/June price.

Nitrate of Soda.—It is expected that the prices for the new season will be announced in the middle of the month. In the meantime very little is being done.

Latest Oil Prices

LONDON, July 9.—LINSEED OIL was weak at 40s. to 20s. per ton decline. Spot, ex mill, £38 10s.; July, £33 5s.; July-August, £32 17s. 6d.; September-December, £32; January-April, £30, naked. RAPE OIL was inactive. Crude extracted, £34; technical refined, £35 10s., naked, ex wharf. COTTON OIL was steady. Egyptian crude, £27; refined common edible, £32; deodorised, £34, naked. TURPENTINE was quiet and 6d. per cwt. lower. American, spot, 37s. 3d.; August, 37s.; September-December, 37s. 9d. Russian, spot, 35s.

HULL.—LINSEED OIL.—Spot, £37; July-August, £35; September-December, £33 5s. COTTON OIL.—Egyptian crude, spot, £28; edible refined, spot, £30 10s.; technical, spot, £30 5s.; deodorised, spot, £32 10s. PALM KERNEL OIL.—Crude naked, 5½ per cent., spot, £28. GROUNDNUT OIL.—Crushed/extracted, spot, £31; deodorised, spot, £35. SOYA OIL.—Extracted and crushed, spot, £28; deodorised, spot, £31 10s. RAPE OIL.—Crushed/extracted, spot, £32 10s.; refined, spot, £34 10s., per ton. TURPENTINE, spot, 40s. 3d. per cwt., net cash terms, ex mill.

South Wales By-Products

THERE is no material change in South Wales by-product activities. Business generally is slow. Pitch, which has been quiet for a long time, shows no sign of improvement, the demand being small and supplies plentiful at from 43s. to 45s. per ton f.o.b. Solvent-naphtha has a moderate call at from 1s. 2d. to 1s. 4d. per gallon, but heavy naphtha has practically no demand at from 11d. to 1s. 1d. per gallon. Creosote is in fair request at from 3d. to 4d. per gallon. Road tar has a moderate call at from 10s. 6d. to 12s. 6d. per 40-gallon barrel at South Wales works. Refined tars are quieter, with prices unchanged for gasworks and coke-oven tar. There is practically no demand for sulphate of ammonia at about £10 2s. per ton delivered. Patent fuel and coke exports remain unsatisfactory. Patent fuel prices for export are :—22s., ex-ship Cardiff; 20s. to 21s., ex-ship Swansea and Newport. Coke prices are :—36s. to 37s. best foundry; 27s. 6d. to 32s. 6d. good foundry, and from 21s. to 21s. 6d. for furnace. Oil imports into Swansea over the four weeks ending July 1, amounted to 21,780,965 gallons.

Scottish Coal Tar Products

THERE is a moderate demand for light creosotes at current prices, but the market as a whole is suffering from the want of orders for prompt delivery and stocks are rising. Orders for road tar are meantime insufficient to cope with the production.

Cresylic Acid.—Orders continue to be very scarce and prices are easy. Pale 99/100 per cent., 1s. 10d. to 1s. 11d. per gallon; pale 97/99 per cent., 1s. 9d. to 1s. 10d. per gallon; dark 97/99 per cent., 1s. 8d. to 1s. 9d. per gallon; high boiling, 1s. 9d. to 1s. 11d. per gallon; all ex makers' works.

Carbolic Sixties.—There being very few buyers at present, the value is easier at 2s. 1d. to 2s. 3d. per gallon f.o.r. works.

Creosote Oil.—Light oils are in fair demand but other grades are quiet. Specification oil, 3d. to 3½d. per gallon; gas works ordinary, 3¼d. to 3½d. per gallon; washed oil, 3¼d. to 3¾d. per gallon; all at makers' works.

Coal Tar Pitch is not commanding much attention either for prompt or forward, and value remains purely nominal at 47s. 6d. per ton f.a.s. Glasgow for export, and about 50s. per ton f.o.r. works for home trade.

Blast Furnace Pitch remains quiet at the controlled prices of 30s. per ton f.o.r. works for home and 35s. per ton f.a.s. Glasgow for export.

Refined Coal Tar is leaving the works in substantial quantities and quotations remain steady at 3½d. to 4d. per gallon filled into buyers' packages at makers' works.

Blast Furnace Tar is unchanged at 2¾d. per gallon.

Crude Naphtha is commanding about 4d. to 4½d. per gallon for any supplies available.

Water White Products are in moderate call with prices unchanged. Motor benzol, 1s. 6¼d. to 1s. 7d. per gallon; solvent naphtha 90/160, 1s. 3d. to 1s. 4d. per gallon; heavy solvent 90/190, 1s. 1d. to 1s. 2d. per gallon; all ex works in bulk.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing this firm's independent and impartial opinions.*

Glasgow, July 8, 1930.

THE Scottish heavy chemical market continues to be dull, and relatively few inquiries are reported.

Industrial Chemicals

ACETONE B.G.S.—£71 10s. to £80 per ton, ex wharf, according to quantity. Inquiry remains satisfactory.

ACID ACETIC.—Prices ruling are as follows:—Glacial 98/100%, £53 to £64 per ton; pure, £37 10s. per ton; technical 80%, £37 10s. per ton, ex wharf.

ACID BORIC.—Granulated, £22 per ton; crystals, £23 per ton; powder, £24 per ton, packed in 1 cwt. bags free, delivered Great Britain in 1 ton lots and upwards.

ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. per carboy. Dearsenicated quality, 5s. 6d. per carboy, ex works, full wagon loads.

ACID NITRIC 80° quality.—£24 10s. per ton, ex station, full truck loads.

ACID OXALIC 98/100%.—On offer at the same price, viz., 3¼d. per lb., ex store. Offered from the Continent at 3⅛d. per lb., ex wharf.

ACID SULPHURIC.—£3 2s. 6d. per ton, ex works, for 144° quality; £5 15s. per ton for 168°. Dearsenicated quality, 20s. per ton extra.

ACID TARTARIC B.P. CRYSTALS.—Quoted 1s. 4d. per lb., less 5% ex wharf. On offer for prompt delivery from the Continent at 1s. 4½d. per lb., less 5% ex wharf.

ALUMINA SULPHATE.—Quoted at round about £8 15s. per ton, ex store.

ALUM, LUMP POTASH.—Now quoted £8 7s. 6d. per ton, c.i.f. U.K. ports. Crystal meal, about 2s. 6d. per ton less.

AMMONIA ANHYDROUS.—Quoted 10¼d. per lb., containers extra and returnable.

AMMONIA CARBONATE.—Lump quality quoted £36 per ton; powdered, £38 per ton, packed in 5 cwt. casks, delivered U.K. stations or f.o.b. U.K. ports.

AMMONIA LIQUID 880°.—Unchanged at about 2½d. to 3d. per lb., delivered, according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £21 to £22 per ton, ex station. Fine white crystals offered from the Continent at about £17 5s. per ton, c.i.f. U.K. ports.

ANTIMONY OXIDE.—Rather easier, and spot material now obtainable at round about £30 per ton, ex wharf. On offer for shipment from China at about £27 per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED.—Quoted £18 per ton, ex wharf, prompt shipment from mines. Spot material still on offer at £19 15s. per ton, ex store.

BARIUM CHLORIDE.—In good demand and price about £11 per ton, c.i.f. U.K. ports. For Continental material our price would be £10 per ton, f.o.b. Antwerp or Rotterdam.

BLEACHING POWDER.—British manufacturers' contract price to consumers unchanged at £6 12s. 6d. per ton, delivered in minimum 4 ton lots. Continental now offered at about the same figure.

CALCIUM CHLORIDE.—Remains unchanged. British manufacturers' price, £4 15s. per ton to £5 5s. per ton, according to quantity and point of delivery. Continental material on offer at £3 12s. 6d. per ton, c.i.f. U.K. ports.

COPPERAS GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works or £4 12s. 6d. per ton, f.o.b. U.K. ports.

FORMALDEHYDE 40%.—Now quoted £33 10s. per ton, ex store. Continental material now on offer at about £34 per ton, ex wharf.

GLAUBER SALTS.—English material quoted £4 10s. per ton, ex station. Continental on offer at about £3 per ton, ex wharf.

LEAD, RED.—Price now £34 10s. per ton, delivered buyers' works.

LEAD, WHITE.—Quoted £53 10s. per ton, c.i.f. U.K. ports.

LEAD, ACETATE.—White crystals quoted round about £39 to £40 per ton, ex wharf. Brown on offer at about £2 per ton less.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store. In moderate demand.

METHYLATED SPIRIT.—Industrial quality, 64 O.P., quoted 1s. 8d. per gallon, less 2½% delivered.

POTASSIUM BICHROMATE.—Quoted 4⅛d. per lb., delivered U.K. or c.i.f. Irish ports, with an allowance for contracts.

POTASSIUM CARBONATE.—Spot material on offer at £26 10s. per ton, ex store, offered from the Continent at £25 5s. per ton, c.i.f. U.K. ports.

POTASSIUM CHLORATE, 99¾/100% POWDER.—Quoted £25 10s. per ton, ex wharf. Crystals, 30s. per ton extra.

POTASSIUM NITRATE.—Refined granulated quality quoted £19 2s. 6d. per ton, c.i.f. U.K. ports Spot material on offer at about £20 10s. per ton, ex store.

POTASSIUM PERMANGANATE B.P. CRYSTALS.—Quoted 5¼d. per lb., ex wharf.

POTASSIUM PRUSSIATE (YELLOW).—Spot material quoted 7d. per lb., ex store. Offered for prompt delivery from the Continent at about 6¾d. per lb., ex wharf.

SODA, CAUSTIC.—Powdered 98/99%, £17 10s. per ton, in drums, £18 15s. per ton in casks. Solid 76/77% £14 10s. per ton in drums, £14 12s. 6d. per ton for 70/72% in drums, all carriage paid buyers' station. Minimum 4-ton lots. For contracts 10s. per ton less.

SODIUM BICARBONATE.—Refined recrystallised £10 10s. per ton, ex quay or station. M.W. quality 30s. per ton less.

SODIUM BICHROMATE.—Quoted 3⅞d. per lb. delivered buyers' premises, with concession for contracts.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station. Powdered or pea quality 27s. 6d. per ton extra. Light soda ash £7 13s. per ton, ex quay, minimum 4-ton lots, with various reductions for contracts.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £8 17s. 6d. per ton, ex station, minimum 4-ton lots. Pea crystals on offer at £14 15s. per ton, ex station, minimum 4-ton lots. Prices for this year unchanged.

SODIUM NITRATES.—Chilean producers now offer at £10 2s. per ton, carriage paid buyers' sidings, minimum 6-ton lots, but demand in the meantime is small.

SODIUM PRUSSIATE.—Quoted 5¼d. per lb., ex store. On offer at 5d. per lb., ex wharf, to come forward.

SODIUM SULPHATE (SALTCAKE).—Prices 55s. per ton, ex works, 57s. 6d. per ton delivered, for unground quality. Ground quality 2s. 6d. per ton extra.

SODIUM SULPHIDE.—Price for home consumption: solid 61/62%, £9 15s.; broken 60/62%, £10 15s. per ton. Crystals 30/32%, £7 17s. 6d. per ton, all delivered buyers' works on contract minimum 4-ton lots. Special prices for some consumers. Spot material, 5s. per ton extra.

SULPHUR.—Flowers, £12 per ton; Roll, £10 10s. per ton; rock, £9 5s. per ton; ground American, £9 5s. per ton, ex store.

ZINC CHLORIDE 98%.—British material offered at round about £20 per ton f.o.b. U.K. ports.

ZINC SULPHATE.—Quoted £10 per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

British Standard Conversion Tables

THE British Engineering Standards Association has recently issued comprehensive tables of conversions of inches to millimetres and millimetres to inches, covering both fractional and decimal subdivisions of an inch, and giving the conversions to the various degrees of accuracy mostly used in the classes of work coming within the scope of the Association. The tables of inches and fractional sub-divisions of an inch give the conversions of every $\frac{1}{64}$th of an inch up to and including 12 inches, whilst those for inch measurements in the decimal system give the conversions of every $\frac{1}{1000}$ of an inch up to 1 in. The table of conversions of millimetres to inches gives the conversion of every millimetre from 1 to 1,000.

Included in the publication is a table giving conversion factors for linear, square, and cubic measures, weights, stresses, pressures and weights per unit length, for various measures common in engineering. The greatest care has been taken to ensure accuracy in the published figures. They have been checked by the National Physical Laboratory and the publication is printed from sterotype plates so that there may be no risk of errors resulting from displacement of type. It is felt, therefore, that the tables may be used with every confidence, and that they will provide a valuable addition to the reference books of every engineering office which has occasion to use the metric system of measurement in addition to the British.

Copies of these Tables, No. 350–1930, may be obtained from the Publications Department, British Engineering Standards Association, 28, Victoria Street, London, S.W.1, (2s. 2d., post free).

American Bromine Consumption Increase

THE United States bromine output in 1929 from brines and bitterns was nearly three times greater than in the previous year. Production of liquid bromine and the bromine content of salts totalled 3,207 short tons, as reported by salt producers to the Bureau of Mines. Much of this increased consumption is attributed to the requirements of ethylene dibromide used in anti-knock compounds for gasoline.

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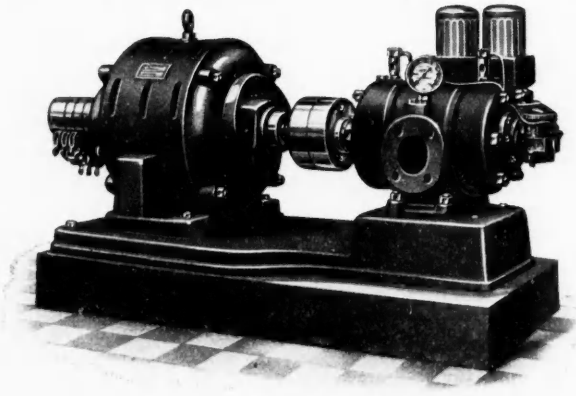

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Manchester Chemical Market

[From Our Own Correspondent.]

Manchester, July 10, 1930.

Values of one or two lines on the chemical market continue to display marked uncertainty in tendency and here and there further slight weakness has developed during the past week, with, however, most of the leading products, particularly the alkalis, keeping reasonably steady. No big weight of business has been put through this week, deliveries to the textile consuming interests at the present time being on a much-reduced scale compared with normal. A moderate demand is reported in respect of prompt and near delivery transactions, though most of the orders individually are for relatively small lots.

Heavy Chemicals

Prussiate of soda is attracting a moderate amount of buying interest and values in this section are fully maintained at from 4¾d. to 5¼d. per lb., according to quantity. The demand for sulphide of sodium has been on rather a quiet scale, with offers of the commercial grade at round £8 per ton and of the 60-65 per cent. concentrated solid quality at £10. There is a limited inquiry about in the case of phosphate of soda, with the dibasic material quoted to-day at from £11 to £11 10s. per ton. Bicarbonate is in moderate request and prices are firm at £10 10s. per ton, in contracts. Chlorate of soda shows little change on the week at about £24 15s. per ton, but buying interest in this material is rather quiet. Alkali is firm and in fair request at about £6 per ton. With regard to bichromate of soda, this meets with some inquiry at 3⅞d. per pound, less 1 to 3½ per cent. Caustic soda is moderately active and offers are well held at from £12 15s. to £14 per ton, in contracts and according to quality. There is a quiet demand in the case of saltcake, values of which are at up to £3 per ton. Hyposulphite of soda is steady and in fair request at about £9 per ton for the commercial quality and from £15 to £15 10s. per ton for the photographic.

Buying interest in respect of permanganate of potash is on a quiet scale but there has been no alteration in the price position, the B.P. grade being quoted at up to 5½d. per lb. and the commercial at 5¼d. Caustic potash is attracting only a relatively limited inquiry and at round £29 10s. per ton values are not too strong. Bichromate of potash is maintained on the basis of 4⅝d. per lb., less 1 to 3½ per cent., a moderate demand being experienced for this material. Yellow prussiate of potash is well held at from 6¾d. to 7¼d. per lb., according to quantity, a quietly steady business being put through. Chlorate of potash is on the quiet side, but offers are held at about £26 per ton. There has been no further weakening in the case of carbonate of potash, current quotations for which are about £25 per ton.

Arsenic has met with a moderate inquiry during the past week, with white powdered, Cornish makes, obtainable at round £16 per ton at the mines. Sulphate of copper is on the easy side at from £23 10s. to £24 per ton, f.o.b., and buying interest in this material is not too strong. Only a quiet business is passing in the lead products and the price tendency is still weak; white acetate is quoted at about £36 per ton and brown at £35, with nitrate at down to £29 per ton. The acetates of lime are in moderate request, and at £14 10s. to £15 per ton for the grey quality and round £7 10s. for the brown values show little alteration on balance.

Acids and Tar Products

Neither for citric nor tartaric acid is the demand at all active just now and the falling tendency of prices continues, current quotations being at about 1s. 6¼d. and 1s. 1d. per lb., respectively. Acetic acid is firm and a fair trade is going through at £66 per ton for the glacial quality and £36 per ton for the commercial 80 per cent. Oxalic acid shows little change at about £1 12s. per cwt., ex store, though the demand in this section is very moderate.

Among the by-products, pitch is inactive at a more or less nominal figure of 47s. 6d. per ton, f.o.b. A moderate demand is reported in the case of creosote oil at from 3d. to 4d. per gallon, naked. Solvent naphtha is steady and in fair request at round 1s. 2½d. per gallon. Carbolic acid is quiet and easy at 2s. 3d. per gallon, naked, for the crude 60's material, and 7d. per lb. for crystals.

Company News

Bradford Dyers' Association.—It is announced by the directors that a further 49,237 5 per cent. cumulative preference shares and 19,237 ordinary shares have recently been issued. As a result of this issue, the present capitalisation is £4,808,031 in 2,549,237 £1 preference shares and 2,258,794 £1 ordinary shares.

Lagunas Nitrate Co.—The debit balance of profit and loss account brought forward from 1928 was £7,606, and loss for 1929 was £5,568, giving a debit balance to be carried forward of £13,174. Consequent upon the transfer of the control of the company to Mr. Santiago Sabioncello, the following directors have resigned from the board: Messrs. R. E. Morris, W. S. Eyre, John Hunter, W. G. Holloway, N. A. Grant and Sir H. W. S. Jerningham. Their places have been filled by Messrs Santiago Sabioncello, Juan Maritano, W. E. Wells, Francis Watson and Pedro Sabioncello.

Non-Inflammable Film Co.—In the report for the year ended April 30, 1930, the directors state that the period under review has been devoted chiefly to building and equipping the new factory at Waddon, which was commenced in July, 1929. The excess of expenditure over receipts amounts to £23,395, which has been carried to the development account, making the total at that account of £50,032. The auditors' report is qualified by a statement to the effect that no provision has been made for depreciation, while no provision has been made for losses, amounting to £374, of subsidiary companies which have not carried on any trading for periods ending within the year to April 30, 1930.

Lovering China Clays, Ltd.—The first report for the period from date of formation of the company, May 3, 1929, to March 31, 1930, states that the profit, subject to income-tax, amounts to £24,914, out of which the directors recommend a dividend of 5 per cent. (actual), less income tax, absorbing £15,500, leaving to be carried forward £9,414. Capital reserve account is made up as follows: Profit earned prior to date of incorporation £72,144, less interest on purchase monies to that date £54,565, leaving £17,579, and this sum the directors propose, after satisfying undetermined income-tax liability thereon, to apply in reduction of preliminary expenses account. The directors have decided to acquire certain other china clay works and properties, and for this purpose, as well as to take advantage of any favourable opportunities that may arise, it is proposed to increase the authorised capital of the company to £500,000.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal" have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

British India.—An old-established Indian firm of dealers in oils, paints, machinery, etc., in Karachi is desirous of obtaining British agencies for lubricating oils, greases, etc., for Sind, the Punjab, and Baluchistan. (Ref. No. 18.)

Siam.—The Department of Municipal Affairs, Bangkok, is calling for tenders, to be presented in Siam by August 14, for the supply of 1,050 metric tons of asphalt for roadwork. (Ref. B.X. 6,636.)

Roumania.—A firm of agents in Cernauti desire to obtain the representation of British manufacturers of industrial chemicals, particularly those required in sugar refineries; aniline dyes. (Ref. No. 12.)

An agent in Bucharest desires to obtain the representation of British manufacturers of chemical products. (Ref. No. 13.)

South Africa.—His Majesty's Senior Trade Commissioner in South Africa reports that the South African Railways and Harbours Administration is calling for tenders, to be presented in Johannesburg by August 11, for the supply of red oxide paint, in paste and ready mixed. (Ref. No. B.X. 6,619.)

The South African Railways and Harbours Administration are calling for tenders (Tender No. 1,724) to be presented in Johannesburg not later than August 25, for the supply and delivery of approximately 231,500 lb. of carbide of calcium (Ref. No. B.X. 6648.)

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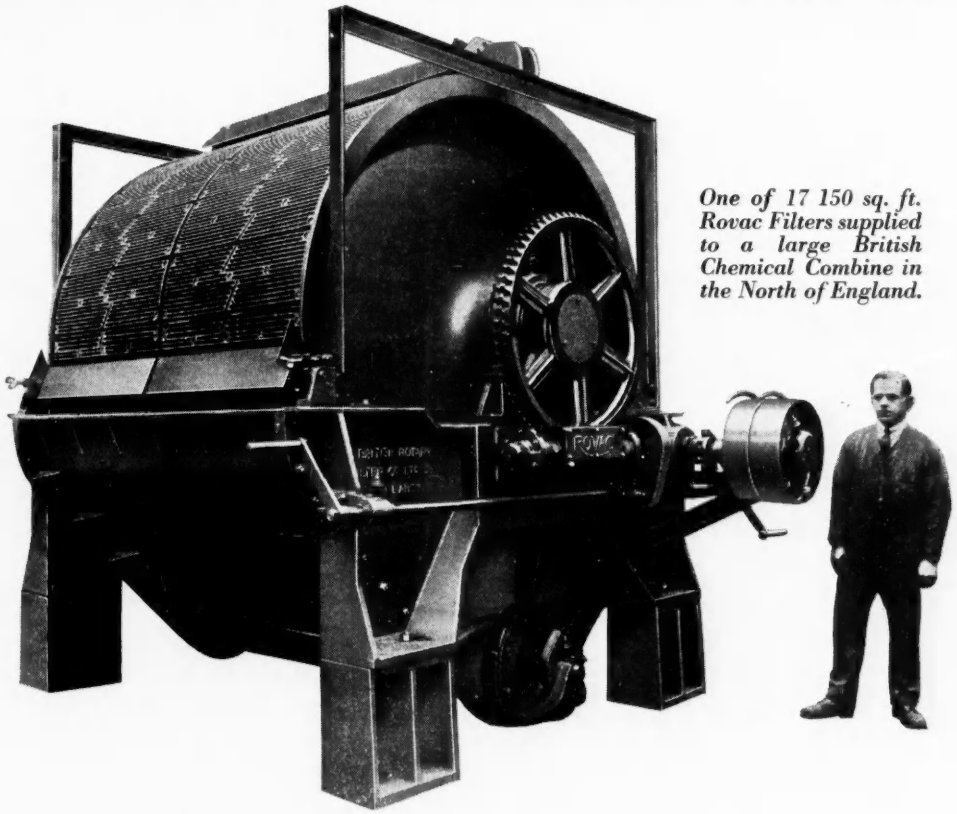

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Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgment

[*NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.*]

STOTT, Milton, and SYKES, Herbert (trading as MILTON STOTT AND CO.), Oxford Works, Siddal, Halifax, manufacturing chemists. (C.C., 12/7/30.) £39 13s. June 5.

Mortgages and Charges

[*NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debt due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.*]

MANCHESTER DYERS (1914), LTD. (M., 12/7/30.) Registered June 26, transfer of mortgage and charge dated December 6, 1929, securing £8,000 (not exceeding), to Waterdale Dyeing and Finishing Co., Ltd., Prestwich; charged on Middleton Dye Works and Reservoir, Crumpsall, also general charge. *£100. August 15, 1929.

TAYLORS (CASH CHEMISTS) MIDLAND, LTD., Birmingham. (M.S., 12/7/30.) Satisfaction registered June 25, £1,100, part of amount registered February 6, 1930, and property at Airedale released.

Receivership

BURDIN AND CO. (1928), LTD. (R., 12/7/30.) H. Raymond Tebb, F.C.A., Old Bank Chambers, Park Row, Leeds, was appointed receiver on July 4, on behalf of the debenture holders.

Deed of Arrangement

[*The following deeds of arrangement with creditors have been filed under the Deeds of Arrangement Act, 1914. Under this Act it is necessary that private arrangements other than those executed in pursuance of the Bankruptcy Act shall be registered within seven clear days after the first execution by the debtor or any creditor. These figures are taken from the affidavit filed with the registered deed, but may be subject to variation on realisation.*]

GIBBS, Archibald Douglas, and NYFIELD, Henry, trading at 36, Wilton Road, Hackney, as MODERN PHARMACY PRODUCTS, manufacturing chemists and pharmaceutical packers. (D.A., 12/7/30.) Dated June 27, filed July 2. Trustee, P. S. Booth, Kimberley House, Holborn Viaduct, E.C. Liabilities unsecured, £872; assets less secured claims, £250.

London Gazette, &c.

Companies Winding Up Voluntarily

GLEBOFF GROSNY PETROLEUM CO., LTD. (C.W.U.V., 12/7/30.) By reason of its liabilities. July 1st. J. Bayfield, of 6, Stone Buildings, Lincoln's Inn, London, W.C., appointed as liquidator.

HOLMES (W. H.) AND SONS, LTD. (C.W.U.V. 12/7/30.) By special resolution passed July 1st, M. H. Groves, of Scarborough Street, West Hartlepool, appointed as liquidator. All creditors have been, or will be, paid in full. The liquidation is for the purpose of amalgamation.

Application for Discharge

SAPER, Lewis, manufacturing chemist, lately carrying on business at 5-9, White Lion Street, Bishopsgate, London, E.1. (A.F.D., 12/7/30.) Hearing, July 29, 11 a.m., Bankruptcy Buildings, Carey Street, London, W.C.2.

New Companies Registered

CHAMPION DRUCE AND CO., LTD., 6, Laurence Pountney Hill, London, E.C.—Registered as a "private" company on July 5. Nominal capital, £100,000 in £1 shares. The objects are to carry on the business of manufacturers and merchants of paints, oils and varnishes, metal merchants, manufacturers, smelters and workers of and dealers in metals, ores, minerals and metallic substances, alloys or amalgams, antimony, turpentine, petroleum, putty, barytes, oxides of any metal, quicksilver, chemical and all kindred substances.

B. CLARKE AND NEPHEWS (LEEDS), LTD.—Registered July 2. Nominal capital, £3,000 in £1 shares. To acquire the business of oil merchants heretofore carried on by F. Fatkin and J. Fatkin as "B. Clarke and Nephews" at Leeds, and to carry on the business of manufacturers, producers, distillers and importers of and dealers in oils, lubricants, greases, tallow, petrol, benzol, motor spirits, tar, bitumen, petroleum, etc. A director: F. Fatkin, Thorner Lodge, Thorner, Yorks.

New Chemical Trade Marks

Applications for Registration

These lists are specially compiled for us from official sources by Gee and Co., Patent and Trade Mark Agents, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.

Opposition to the Registration of the following Trade Marks can be lodged up to July 25, 1930.

SOLWAY.

Advertised before acceptance, the applicants alleging distinctiveness. Concurrent user claimed from the year 1916. Sect. 21.

510,632. Class 1. Mineral dyes. Scottish Dyes, Ltd., Earl's Road, Grangemouth, Stirlingshire; manufacturers. February 25, 1930. To be associated with No. 510,633 (2,726) iv.

LIMBUX.

513,281. Class 2. Chemical substances used for agricultural, horticultural, veterinary and sanitary purposes. The Buxton Lime Firms Co., Ltd., Imperial Chemical House, Millbank, London, S.W.1; quarry owners and lime burners. May 28, 1930.

PREMERAN

512,571. Class 3. Chemical substances prepared for use in medicine and pharmacy. Bayer Products, Ltd., 31 to 34, Basinghall Street, London, E.C.2; merchants and manufacturers. May 2, 1930. (By consent.)

Tariff Change

SOUTHERN RHODESIA.—It is proposed to introduce into the Legislative Assembly during the present session a Bill "to prevent the manufacture, importation and sale of soap of an inferior quality." If it is enacted in its present form, the manufacture, sale and import of any soap which is not of the undermentioned standards will be prohibited: (*a*) Soap for household, laundry or toilet purposes shall contain not less than 45 per cent. of fatty acids, of which not more than one-third may be replaced by rosin acids, and shall not contain more than 0·25 per cent. of free caustic alkali calculated as sodium hydroxide; (*b*) soft soap shall contain not less than 35 per cent. of fatty acids, of which not more than one-third may be replaced by rosin acids, and shall not contain more than 0·75 per cent. of free caustic alkali calculated as sodium hydroxide.

"C.A." Query

We receive so many inquiries from readers as to technical, industrial, and other points, that we have decided to make a selection for publication. In cases where the answers are of general interest, they will be published; in others, the answers will simply be passed on to the inquirers. Readers are invited to supply information on the subjects of the queries:—

145. (*Antigel*).—An inquirer wishes to be put into touch with manufacturers or suppliers of a new solvent called "Antigel."